EEI BULLETIN

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• MARCH, 1961 •

Notes on EEI Convention Program and City

Envelope Billing Studied in Survey by EEI Committee

Accounting Conference Program

Report to U.S. Joint Committee on Industry's Atomic Projects

PUBLISHED BY EDISON ELECTRIC INSTITUTE

ELECTRIC UTILITY INDUSTRY Statistics IN THE UNITED STATES

for NOVEMBER 1960

Current Statistical Data Covering 100 Percent of Industry

(Includes Investor-Owned Companies, Cooperatives, and Government-Owned Utilities) — November, 1960

	1960	1959	%
SOURCE AND DISPOSAL OF ENERGY			
NET GENERATION* (Kwhr in Thousands)			
By Fuel Burning Plants	50,648,692	46,797,140	+ 8.2
By Water Power Plants	10,761,050	11,668,578	— 7.8
Total Generation	**61,409,742**	**58,465,718**	**+ 5.0**
Add—Net Imports over International Boundaries	267,704	370,668	—27.8
Less—Company Use	173,710	166,037	+ 4.6
Less—Energy Used by Producer	1,778,101	1,535,822	+15.8
Net Energy for Distribution	**59,725,635**	**57,134,527**	**+ 4.5**
Lost and Unaccounted for	5,525,126	5,531,866	— 0.1
Sales to Utimate Customers	**54,200,509**	**51,602,661**	**+ 5.0**
CLASSIFICATION OF SALES			
NUMBER OF CUSTOMERS—As of November 30			
Residential or Domestic	49,894,800	48,877,648	+ 2.1
Rural (Distinct Rural Rates)	1,572,489	1,661,810	— 5.4
Commercial or Industrial:			
Small Light and Power	6,407,228	6,337,662**	+ 1.1
Large Light and Power	348,917	348,924**	0.0
Other Customers	202,241	194,546	+ 4.0
Total Ultimate Customers	**58,425,675**	**57,420,590**	**+ 1.8**
KILOWATT-HOUR SALES—DURING Month of November (Kwhr in Thousands)			
Residential or Domestic	15,103,033	14,313,943	+ 5.5
Rural (Distinct Rural Rates)	809,374	874,920	— 7.5
Commercial or Industrial:			
Small Light and Power	9,318,455	8,779,330**	+ 6.1
Large Light and Power	26,504,344	25,424,668**	+ 4.2
Street and Highway Lighting	600,915	561,088	+ 7.1
Other Public Authorities	1,428,586	1,204,746	+18.6
Railroads and Railways	386,271	401,297	— 3.7
Interdepartmental	49,531	42,669	+16.1
Total to Ultimate Customers	**54,200,509**	**51,602,661**	**+ 5.0**
Revenue from Ultimate Customers (Thousands)	**$927,294**	**$881,475**	**+ 5.2**
RESIDENTIAL OR DOMESTIC SERVICE			
AVERAGE CUSTOMER DATA—for 12 months ended November 30, 1960			
Kilowatt-hours per Customer	3,776	3,562	+ 6.0
Average Annual Bill	$93.27	$89.41	+ 4.3
Revenue per Kilowatt-hour	2.47¢	2.51¢	— 1.6

* By courtesy of the Federal Power Commission.
** Revised for comparison purposes.

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The EDISON ELECTRIC INSTITUTE BULLETIN is published monthly, except bi-monthly in July and August, by the Edison Electric Institute, an association of electric light and power companies in the United States and its territorial possessions. Its affiliate members consist of investor-owned electric utilities in North, Central and South America and contiguous islands in the Western Hemisphere.

The objectives of the Edison Electric Institute are:

The advancement in the public service of the art of producing, transmitting, and distributing electricity and the promotion of scientific research in such field.

The ascertainment and making available to the members and the public of factual information, data, and statistics relating to the electric industry.

To aid its operating company members to generate and sell electric energy at the lowest possible price commensurate with safe and adequate service, giving due regard to the interests of consumer, investor, and employee.

Closing date for the BULLETIN is the tenth of the month preceding the month of issue.

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CONVENTIONS and MEETINGS

1961

April

6- 7 EEI Electric Power Survey Committee, EEI Headquarters, New York City, N. Y.
6- 7 PCEA Engineering and Operating Section, Ambassador Hotel, Los Angeles, Calif.
9-13 ASME Oil and Gas Power Conference and Exhibit, Jung Hotel, New Orleans, La.
10-12 EEI Insurance Committee, Cavalier Hotel, Virginia Beach, Va.
12-14 Missouri Valley Electric Association Engineering Conference, President Hotel and Municipal Auditorium, Kansas City, Mo.
13-14 Southeastern Electric Exchange Engineering and Operation Section Conference, Hollywood Beach Hotel, Hollywood, Fla.
16-18 Rocky Mountain Electrical League Annual Spring Conference, Harvest House, Boulder, Colo.
17-18 PCEA Business Development Section, Sheraton-Palace Hotel, San Francisco, Calif.
17-19 EEI-AGA National Conference of Electric and Gas Utility Accountants, The Chase Park-Plaza Hotels, St. Louis, Mo.
17-20 EEI Hydraulic Power Committee, Spokane, Wash.
20-21 Joint EEI Industrial Relations Committee-Southeastern Electric Exchange Personnel Administration Section - Southwestern Personnel Group Meeting, Roosevelt Hotel, New Orleans, La.
24-26 EEI Accident Prevention Committee, Edgewater Beach Hotel, Chicago, Ill.
26-27 Indiana Electric Association, 21st Annual Young Men's Utility Conference, Severin Hotel, Indianapolis, Ind.
26-28 NELPA Engineering & Operation Section Joint Meeting with Personnel and Safety Section, Sheraton-Portland Hotel, Portland, Ore.
27-28 PCEA Administrative Services Section, Villa Hotel, San Mateo, Calif.
30-May 3—National Association of Electrical Distributors Convention, Detroit, Mich.

May

3 ECAP Copy Group, Detroit Leland Hotel, Detroit, Mich.
4- 5 PUAA National Convention, Detroit Leland Hotel, Detroit, Mich.
4- 5 Electric Council of New England Meter and Service Meeting, Hotel Viking, Newport, R. I.
8-10 EEI Prime Movers Committee, Milwaukee, Wis.
8-12 EEI Transportation Committee, Sheraton Hotel, Philadelphia, Pa.
10-11 Electric Council of New England Transmission and Distribution Meeting, Hyannis Inn Motel, Hyannis, Mass.
10-12 EEI Statistical Committee Joint Meeting with New England Council, Schine Inn, Chicopee, Mass.
11-12 PEA Prime Movers Committee, Bellvue Stratford Hotel and Eddystone Station, Philadelphia, Pa.
15-17 EEI Purchasing & Stores Annual Meeting, The Shamrock Hilton, Houston, Texas
17-19 PCEA Annual Convention, Sheraton Palace Hotel, San Francisco, Calif.
18-19 EEI Transmission and Distribution Committee, Netherland Hilton Hotel, Cincinnati, Ohio
24-26 NELPA Accounting and Business Practice Section, Rogue Valley Country Club, Medford, Ore.
25-26 Electric Council of New England Electrical System and Equipment Meeting, Pelham Club, Dennisport, Mass.

June

4 ECAP Management Group, Hotel Pierre, New York City, N. Y.
5- 7 EEI Annual Convention, Waldorf-Astoria, New York City, N. Y.
11-13 Wisconsin Utilities Association Accounting Section Conference, Dell View Hotel, Lake Delton, Wis.
12-14 Electric Council of New England Commercial Industrial Area Development Workshop, Equinox House, Manchester, Vt.
18-23 AIEE Summer General Meeting, Ithaca, N. Y.
25-28 North Central Electric Association, Annual Executive Conference, Lake Okoboji, Iowa
25-30 ASTM Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.
26-28 American Society of Heating, Refrigerating and Air Conditioning Engineers Annual Meeting, Denver, Colo.

August

23-25 AIEE Pacific General Meeting, Salt Lake City, Utah

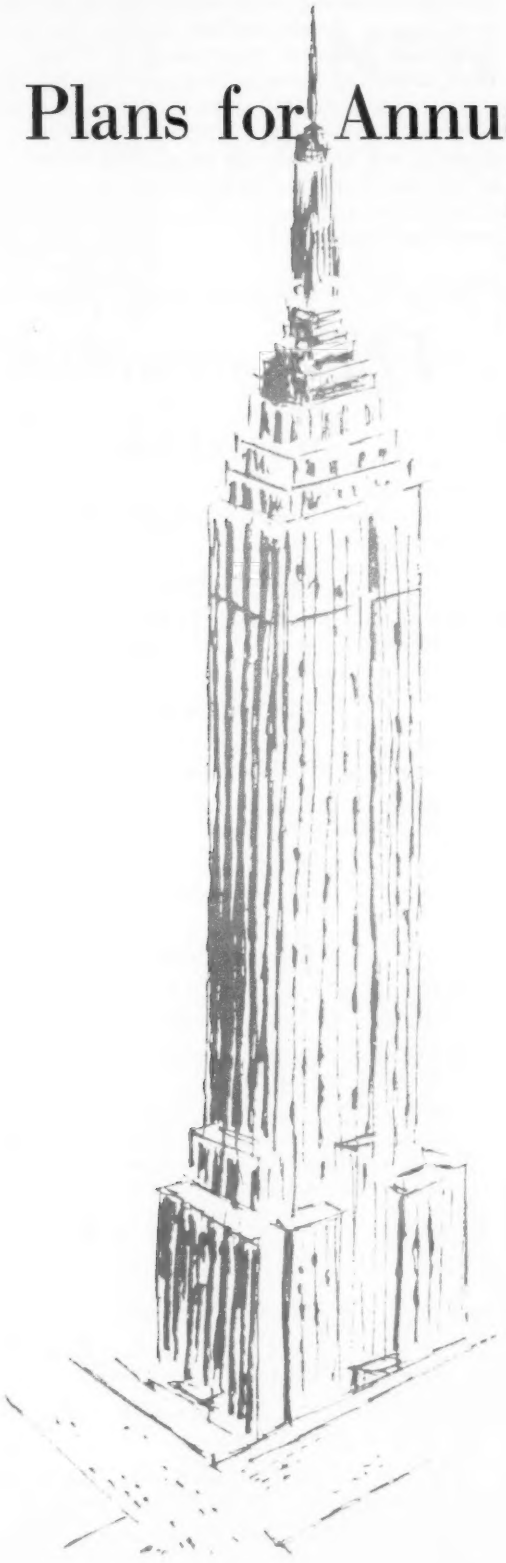
September

10-13 Rocky Mountain Electrical League Annual Fall Convention, Jackson Lake Lodge, Moran, Wyo.
11-12 EEI-AGA Accounting Division & Section Organization Meetings, Netherland Hilton Hotel, Cincinnati, Ohio
14 Vermont Electrical Association Fall Outing, Lake Morey Inn, Fairlee, Vt.
14-16 Public Utilities Association of the Virginias Annual Meeting, White Sulphur Springs, W. Va.
20-21 PIP 1961 Workshop Conference, Brown Palace Hotel, Denver, Colo.
20-22 IIFEUC Eighth Annual National Electric Farm Power Conference, Leamington Hotel, Minneapolis, Minn.
21-22 Missouri Valley Electrical Association Accounting Conference, Sheraton-Jefferson Hotel, St. Louis, Mo.
27-29 Missouri Valley Electrical Association Sales, Rural & Home Service Conference, President Hotel, Kansas City, Mo.
28-29 Southeastern Electric Exchange Accounting Section Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

October

2- 4 EEI Prime Movers Committee, Denver, Colo.
4- 6 Indiana Electric Association, 52nd Annual Convention, Sheraton Hotel, French Lick, Ind.
15-20 AIEE Fall General Meeting, Detroit, Mich.
26-27 PCEA Hawaiian Conference, Princess Kaiulaui Hotel, Honolulu, Hawaii

Plans for Annual Convention of the Institute Near Completion



PLANS for the 29th Annual EEI Convention, to be held June 5-7 at the Waldorf-Astoria Hotel in New York City, are nearing completion, H. J. Cadwell, Chairman of the EEI Convention Program Committee, and President of Western Massachusetts Electric Co., has announced.

Many outstanding speakers from within and outside the industry have accepted invitations to appear on the program, which will have as its theme, "Targets for Tomorrow in Electric Power." The complete program will be announced in the April EEI BULLETIN.

The Program Committee has selected speakers and subjects to present the challenges and opportunities facing the investor-owned electric utility industry in the future, as it sets itself to the task of assuring the continuance of the United States' world pre-eminence in the production and use of electric energy.

Serving on the Program Committee with Mr. Cadwell are C. E. Eble, President of Consolidated Edison Co. of New York, Inc.; O. T. Fitzwater, President of Indianapolis Power & Light Co.; N. R. Sutherland, President of Pacific Gas and Electric Co.; T. H. Wharton, President of Houston Lighting & Power Co.; and E. H. Will, Chairman of the Board, Virginia Electric & Power Co.

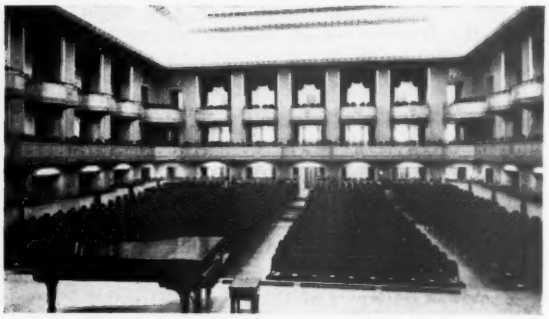
Social, Recreational Activities

On Monday evening, June 5, electric utility company personnel and their guests will have an opportunity to meet socially at the President's Reception, which will be held at the Commodore Hotel Ballroom from 5:30 to 7:30.

A luncheon for the ladies will be held at 12 noon, Tuesday, in the Ballroom of the Astor Hotel. The luncheon will be followed by a fashion show, after which the ladies will board the "Peter Stuyvesant," sightseeing boat, for a cruise around Manhattan Island.

A cordial invitation is extended to the ladies by Sherman R. Knapp, EEI President, and President, The Connecticut Light & Power Co., to attend business sessions. In particular, they are urged to attend the opening session at 2:30 p.m. Monday, June 5, and the closing session at 2:30 p.m. Wednesday, June 7. Both sessions promise to be of particular interest to the ladies.

Convention delegates are requested to register as



The 29th Annual Convention of Edison Electric Institute will be held in the Waldorf-Astoria Hotel, top photo, Park Ave. and 50th St., in New York City. The Main Ballroom, lower photo, will be the scene of the five general sessions of the convention, June 5-7. A record attendance is anticipated.

soon as possible after arriving in New York. Registration facilities will be located at the entrance of the Waldorf-Astoria Ballroom, on the following schedule: Sunday, June 4, 1 p.m. to 6 p.m.; Monday, 8:30 a.m. to 5 p.m.; Tuesday, 8:30 a.m. to 5 p.m.; Wednesday, 8:30 a.m. to 3 p.m. Convention badges for gentlemen are required for admission to all business sessions and social functions. Pins will be provided for the ladies. These will be available only upon registration. The registration fee is $15.

All applications for reservations of hotel rooms should be made directly to the EEI Convention Housing Bureau, c/o New York Convention and Visitors Bureau, Inc., Pershing Square, 90 East 42nd St., New York 17, N. Y. Confirmation of hotel reservations will be made by the individual hotels. The Housing Bureau suggests that those planning to attend the Convention list four hotel choices. Hotels available include: Barclay, Belmont Plaza, Biltmore, Commodore, New Weston, Park Lane, Roosevelt, Sheraton-East, and Waldorf-Astoria.

New York is easy to reach—by plane, bus or train. It is served by three major airports—International, La-Guardia, and Newark—and trains from all parts of the nation arrive often at Pennsylvania or Grand Central Station. The city is served by a number of transcontinental and local bus lines.

EEI Convention Schedule

New York City—June 5-7

Sunday, June 4

1 p.m. to 6 p.m.—Registration, Ballroom entrance, Waldorf-Astoria Hotel

Monday, June 5

8:30 a.m. to 5 p.m.—Registration, Ballroom entrance, Waldorf-Astoria Hotel

2:30 p.m.—First General Session, Ballroom, Waldorf-Astoria Hotel

5:30 p.m. to 7:30 p.m.—President's Reception, Ballroom, Commodore Hotel

Tuesday, June 6

8:30 a.m. to 5 p.m.—Registration, Ballroom entrance, Waldorf-Astoria Hotel

9:30 a.m.—Second General Session, Ballroom, Waldorf-Astoria Hotel

12 Noon — Ladies' Luncheon and Fashion Show, Ballroom, Astor Hotel, followed by cruise around Manhattan Island aboard the sightseeing boat, "Peter Stuyvesant"

2:30 p.m.—Third General Session, Ballroom, Waldorf-Astoria Hotel

Wednesday, June 7

8:30 a.m. to 3 p.m.—Registration, Ballroom entrance, Waldorf-Astoria Hotel

9:30 a.m.—Fourth General Session, Ballroom, Waldorf-Astoria Hotel

2:30 p.m.—Fifth General Session, Ballroom, Waldorf-Astoria Hotel. Presentation of The Edison Award

NEW YORK

EEI Convention City

A handful of Dutch settlers in 1626 paid a tribe of North American Indians $24 for a wooded island 13 miles long and 1¾ miles wide. Today—335 years after this early American real estate transaction—the Indians could not buy back the island for $24 a square foot.

For the island was Manhattan, one of the five boroughs comprising New York City and what the non-New Yorker thinks of when the name New York is mentioned. Some 1,700,000 people live on this 22-square-mile island, and hundreds of thousands more who work there flock to Manhattan each week-day from other boroughs, Long Island, and the suburbs. The total assessed valuation of taxable real estate in Manhattan now is $11,000,000,000, and $26,000,000,000 for the city.

The biggest city in the United States, it is also the Number One port of North America, the financial center of the hemisphere, the biggest publishing center in the nation, and the largest manufacturing center of North America.

New York provides its visitors with 125,000 rooms—more than any city in the world—in its 400 hotels.

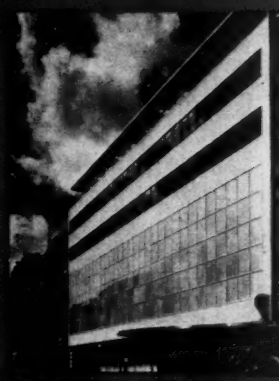
Prometheus Fountain, Rockefeller Center

N. Y.'s Metropolitan Museum of Art ▶

Yankee Stadium in The Bronx

The New York Public Library

Tomb of Gen. U. S. Grant ▶

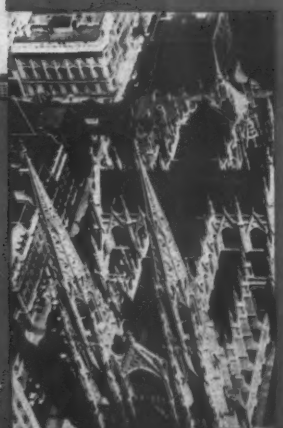


The Museum of Modern Art

Radio City Music Hall

'ALL AROUND THE TOWN'

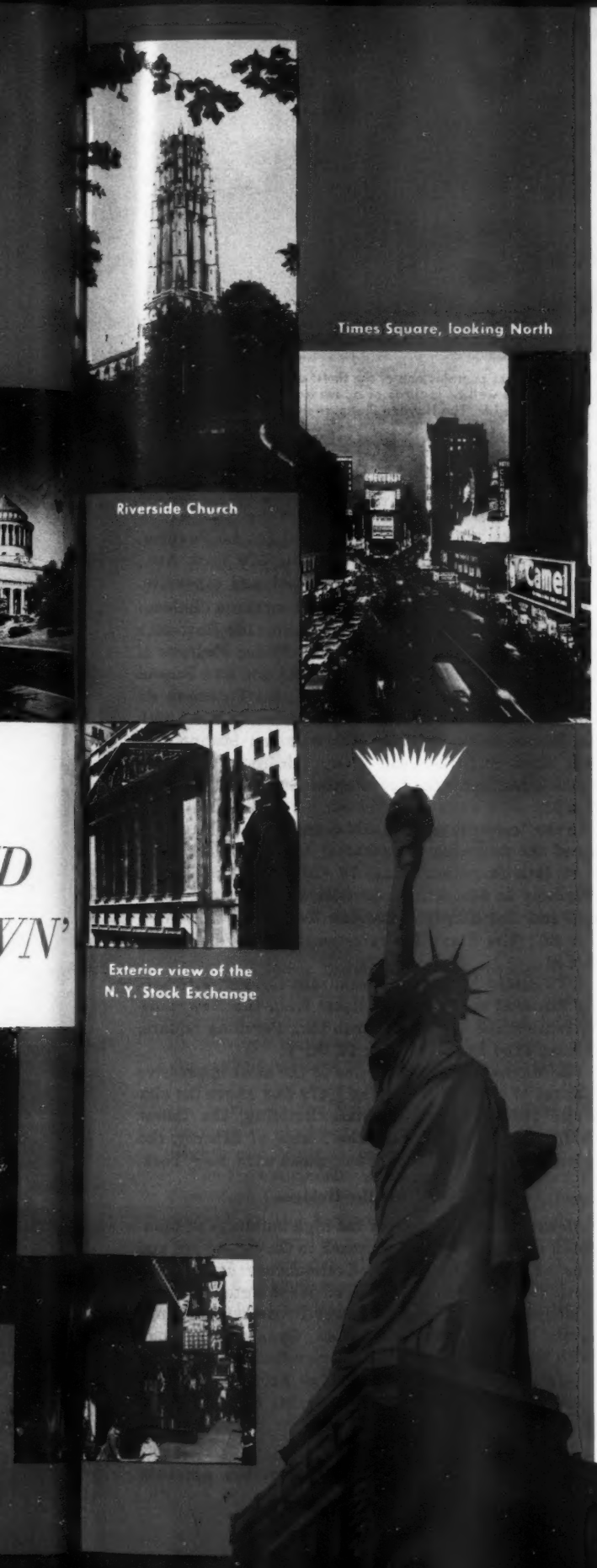
Brooklyn Bridge



St. Patrick's Cathedral ▶

Central Park in the heart of Manhattan

A street scene in N. Y.'s Chinatown ▶



Many feel its cuisine is unmatched anywhere in the nation, and possibly in the world, whether it's a broiled, juicy hotdog in a Times Square luncheon counter, or an authentic early Roman delicacy baked in clay at an elegant East Side restaurant.

There are so many attractions in the city that New Yorkers live out their lives without getting around to more than a fraction of them.

New York is the most cosmopolitan city in the world. More than 2,000,000 of the city's nearly 8,000,000 inhabitants are foreign-born. Dozens of tongues are spoken, and newsstands offer daily newspapers in German, Yiddish, Italian, and French, in addition to the seven major English language dailies. New York actually is hundreds of communities within the confines of the city.

Colleges, Universities, Institutions

New York City is the seat of the four city colleges —City, Hunter, Brooklyn, and Queens—as well as Columbia University, New York University, Fordham University, Long Island University, St. John's College, the New School for Social Research, the Union, General, and Jewish Theological seminaries, Cooper Union, Notre Dame College of Staten Island, and many professional and scientific schools and associations. Three public library systems have 144 large and small libraries, with 25,000,000 books being consulted or borrowed each year. The main building, New York Public Library, at Fifth Ave. and 42nd St., contains more than 80 miles of well-filled bookshelves.

The skeleton of a 25-ton Brontosaurus, which roamed the earth in prehistoric days, shares the halls of the American Museum of Natural History, on Central Park West, with the tiniest of insects, as well as a magnificent display of the mammals from all parts of the globe, 400 different birds, and a collection of minerals and gems, fossil fishes, and marine life. The museum also operates the Hayden Planetarium, Central Park West at 81st St., where the stars and other heavenly bodies are projected by rays of light on a 75-foot dome.

More than 350,000 works of art, illustrating the cultures of ancient Assyria, Egypt, Greece, Rome, the Near East, and the Far East, as well as the arts of Europe and the United States, are displayed at the Metropolitan Museum of Art, Fifth Ave. at 82nd St. This collection is the largest of its kind in the Western Hemisphere. The museum's collection includes some 4,800 European paintings, and a vast number of American paintings and sculptures from colonial times to the present.

The Museum of Modern Art, 11 West 53rd St., is a new kind of museum that exists for the primary purpose of helping people enjoy, understand, and use the visual arts of our times.

The last building designed by master architect Frank Lloyd Wright is the Solomon R. Guggenheim Museum, 1071 Fifth Ave. The circular museum is primarily devoted to contemporary 20th-century art, American and European.

The American Museum of Natural History, Central Park West, from 79th to 81st St., contains one of the finest collections of its kind in the world. Here can be found reconstructed skeletons of prehistoric animals, as well as replicas of native haunts of wild beasts. The museum has a vast collection of birds, minerals and gems, fossil fishes, and marine life. The Hayden Planetarium is next to Museum.

Among the other museums of interest are the Museum of the City of New York, on Fifth Ave., between 105th and 106th Sts., which illustrates the history and life of the city by permanent and special exhibitions, and the New York Historical Society, on Central Park West, between 76th and 77th Sts.

Medieval Art at the Cloisters

The Cloisters in Fort Tryon Park, N. Y., a branch of the Metropolitan Museum, is devoted to medieval art. Incorporated in the building are four cloisters reconstructed with original elements from the French monasteries of Cuxa, St. Guilhem-le-Desert, Bonnefort, and Trie. The site of the Cloisters, the building, and most of the collections, are the gift of John D. Rockefeller, Jr.

The Frick Collection, 1 East 70th St., consists mainly of 14th to 19th century paintings. The Pierpont Morgan Library, 29-33 East 36th St., has rare collections of medieval and renaissance manuscripts, incunabula, historical and literary manuscripts, letters and documents, bookbindings, master drawings, and prints.

Theodore Roosevelt Museum, 28 East 20th St., occupies two brownstones, one of which was the birthplace of Teddy Roosevelt. This museum contains personal items of Mr. Roosevelt, including the original furniture in the bedroom where he was born.

New York has many fine parks, and some beautifully landscaped gardens. Nearly half the 840 acres of Central Park are wooded; the 698 acres of Bronx Park contain extensive botanical and zoological gardens. Prospect Park is Brooklyn's largest. Some of the smaller squares and parks are Madison Square, Morningside Park, Washington Square Park (the gateway to Greenwich Village), and Riverside Park, which begins at Riverside Drive and 72nd St., on New York's West Side and extends several miles along the Hudson River.

Dining in New York can be a never-ending pleasure. Several of the great daily newspapers in the city have reporters sampling foods at a different restaurant every night. A national magazine recently dared to list the 30 "finest" restaurants from among 10,000 in the city.

The list included: The Baroque, 14 East 53rd St., The Brussels, 115 East 54th St., Cafe Chambord, 803 Third Ave., near 49th St., Cafe Chauveron, 139 East 53rd St., The Colony, 30 East 61st St., Forum of the 12 Caesars, 57 West 48th St., The Four Seasons, 99 East 52nd St., 21 Club, 21 West 52nd St., Le Pavillon, 111 East 57th St., Restaurant Voisin, 575 Park Ave., all of which are elegant, distinguished, and expensive.

For "notably fine foods," the magazine chose Chateaubriand, 131 East 54th St.; Christ Cella, 160 East 46th St.; The Coach House, 110 Waverly Place; Fontana di Trevi, 151 West 57th St.; The Gold Coin, 994 Second Ave.; Luchow's, 110 East 14th St.; La Potiniere du Soir, 47 West 55th St.; Les Pyrenees, 234 West 48th St.; Romeo Salta, 39 West 56th St.; San Marino, 159 East 53rd St.; Le Veau d'Or, 129 East 60th St.; Whyte's Restaurants, 145 Fulton St., and 344 West 57th St.

In the "colorful and unusual category," the magazine placed the following restaurants: Cafe de France, 313 West 46th St.; Chez Vous, 78 Carmine St.; Lindy's, Broadway at 51st St.; Moskowitz & Lupowitz, Second Ave. and 2nd St.; The Russian Tea Room, 150 West 57th St.; The Stage Delicatessen, Seventh Ave., near 53rd St.

A "Visitors New York Restaurant Guide," with several hundred entries, is available from the New York Convention and Visitors Bureau Inc., Pershing Square, 90 East 42nd St., New York 17, N. Y.

The Manhattan skyline is one of the most impressive features of the city. Towering 1,472 feet above the city is the 102-story Empire State Building, the tallest building in the world. Like the Statue of Liberty, the Empire State Building is synonymous with New York.

View from the Bridges

An extraordinary view of the high buildings of Manhattan is afforded in the approach to the city by sea and some of the bridges. The Customhouse at Bowling Green is on the former site of Washington's official residence. Among the great lower Broadway buildings are the Standard Oil, Manhattan, Cunard, and Woolworth Buildings. The Cities Service Building, 67 stories high, is the tallest of the Wall St. structures.

The Chrysler Building, at 42nd St. and Lexington Ave., is the second tallest building in the world. The

The Four Seasons Restaurant, left, 99 East 52nd St., is one of the most celebrated restaurants in New York. The restaurant serves "contemporary" cuisine of New York, changing its menu and its decor with the seasons of the year. The Cloisters, right, is a branch of the Metropolitan Museum of Art and is devoted to medieval art. It is a gift of John D. Rockefeller, Jr.

needlelike spire above its 77 stories reaches 1048 feet into the air. The 12 buildings of Rockefeller Center are a skyscraper group and a city within a city.

New York's major exhibition hall is the Coliseum, facing Columbus Circle, between West 58th and West 60th Sts. The Coliseum, completed in 1956 at a cost of some $35 million, has about nine acres of floor space.

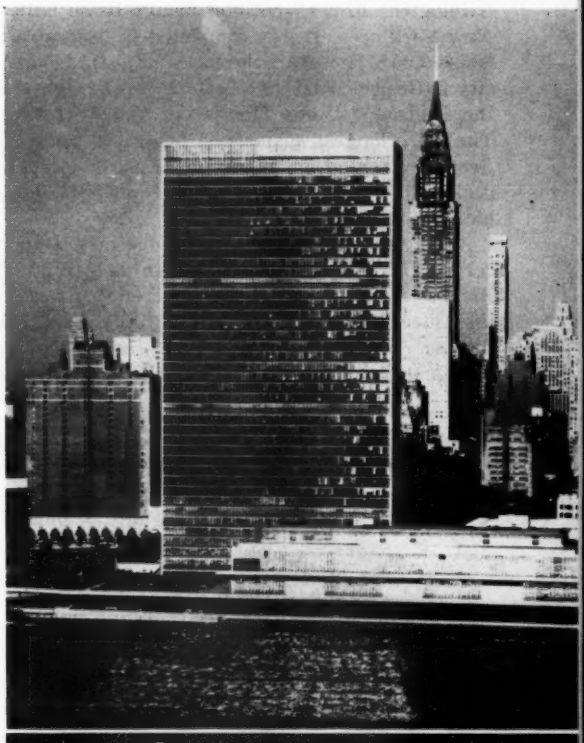
United Nations headquarters occupies 18 acres between First Ave. and Roosevelt Drive (East River Drive), from East 42nd to East 48th Sts. The Secretariat of the U. N. is one of the most photographed buildings in the world, and attracts thousands of visitors every day.

Grand Central Terminal Building, popularly called "Grand Central Station," faces Park Ave. at East 42nd St. Five hundred trains arrive or depart daily from here, and some 60,000,000 passengers use the terminal's facilities each year. The other major railroad passenger center is Pennsylvania Station, which occupies the block between Seventh and Eighth Aves., and 32nd and 33rd Sts.

Three Major Airports Serve City

In addition to the two railroad stations, New York is served by three major airports and dozens of bus lines, which transport hundreds of thousands of commuters and visitors to and from New York every day. The largest of these bus depots—and the largest in the world—is the Port Authority Bus Terminal, occupying the block between West 40th and 41st Sts., and Eighth and Ninth Aves., in Manhattan.

The Port Authority also operates the city's airports. New York International Airport (Idlewild), located in Queens, is the largest of the air terminals (4,900 acres), and handles some 7,000,000 passengers a year. LaGuardia Airport, also in Queens, in 1959 handled nearly 5,500,000 passengers. Newark Airport in New Jersey accommodated more than 3,000,000 that year.



The United Nations Building, center, top photo at right, is shown from the East River. One of the most photographed buildings in the world, it has clean, striking lines that make it easy to identify. New York's International Airport, lower photo, at right, shows Liberty Plaza in front of the International Arrival Building.

The Authority operates Teterboro Airport in Teterboro, N. J., which is used by private and corporate aircraft.

Lincoln Tunnel, the only three-tube under-river tunnel in the world, connects mid-town Manhattan with Weehawken, N. J., running under the Hudson River. The center tube of the tunnel is the longest—8,216 feet. Nearly 29,000,000 vehicles used Lincoln Tunnel in 1958. Holland Tunnel, also under the Hudson River, has two tubes, and connects Canal St., Manhattan, with 12th and 14th Sts., Jersey City. The Queens Midtown Tunnel connects 34th St., Manhattan, with the Borough of Queens, and the Brooklyn-Battery Tunnel connects lower Manhattan with Brooklyn.

The Bridges of New York

Different parts of the city are connected by several bridges. Probably the most famous of all is Brooklyn Bridge, the first suspension bridge to be built in the New York area. It was completed in 1883 at a cost of $25,000,000. However, the most majestic bridge in the city is George Washington Memorial Bridge, spanning the Hudson between Manhattan and Fort Lee, N. J. The third longest suspension bridge in the world, the George Washington has eight traffic lanes. A second deck will be completed in 1962. Nearly 40,000,000 vehicles use this bridge each year.

Among the other New York bridges are High Bridge, across Harlem River, Manhattan and Williamsburg Bridges, which span the East River to Brooklyn, and the Queensboro Bridge, crossing the East River to Queens. The Triborough Bridge, connecting Manhattan, Queens and The Bronx, and the Bronx-Whitestone Bridge, connecting Queens and The Bronx, are also impressive structures.

Unique among New York's amazing traffic system of bridges, tunnels, subways, trains, airports and buses, is the Staten Island Ferry. Here truly must be the world's biggest bargain in transportation. The 27-minute ferry ride from the Battery in lower Manhattan, to St. George, S. I., still costs only a nickel. This ride is very popular with New York visitors. The ferry passes the Statue of Liberty on small (12 acres) Liberty Island, known until 1956 as Bedloe's Island, and Governors Island, headquarters of the U. S. First Army.

To the New York visitors, a trip to the Statue of Liberty is a "must." Recognized as a symbol of a free people throughout the freedom-loving world, the statue is a gift of France, and the product of the Alsatian sculptor, Frederic Auguste Bartholdi.

Other historical sites of interest to visitors include Castle Clinton, on the west side of Battery Park in Manhattan; Edgar Allan Poe Cottage, Grand Concourse and Kingsbridge Road, where Poe wrote "Annabel Lee" and other poems; Federal Hall Memorial, at the northeast corner of Wall and Nassau Sts., originally the U. S. Sub-Treasury (here stood the Colonial City Hall, where the Continental Congress began meeting in January, 1785); Fraunces Tavern, Broad and Pearl Sts., scene of Washington's farewell to his armies in 1783; Grant's Tomb, Riverside Drive at 122nd St., a formal Roman-style mausoleum; Washington Square, at the foot of Fifth Ave., the best known landmark in Greenwich Village, distinguished for homes of artists,

(Continued on page 89)

George Washington Memorial Bridge, linking upper Manhattan with Fort Lee, N. J., is the most striking bridge in New York City. It is the third longest suspension bridge in the world, and is used by nearly 40,000,000 vehicles each year. It was completed in 1931.

Envelope Billing Studied in Survey by EEI Committee

A SURVEY conducted by the EEI Public Relations Committee, under the Chairmanship of P. V. Hayden, Vice President, The Connecticut Light & Power Co., indicated that many investor-owned electric utility companies favor envelope billing over postcard billing, despite the extra cost.

While those companies—large, medium, and small—utilizing envelope billing feel that the advertising rewards of the system far outweigh the additional cost, a recent poll made by Reddy Kilowatt, Inc., of some 200 investor-owned electric utility companies, showed that 79.2 percent used postcard billing, and 20.8 percent envelope billing.

The EEI Public Relations Committee's survey produced many reasons why some companies prefer envelope billing. There was a considerable variation in the areas of interest covered by these reasons, the principal areas being concern for customer-public relations, the expeditious handling of business procedures, and the opportunity for significantly extending the uses to which electricity may be put.

In the customer-public relations area, companies see an opportunity in envelope billing to overcome some of the drawing away from direct employee-customer contact that has resulted from reductions in the numbers of field offices through consolidations. For example, some of the replies to the committee's survey told of their own company surveys which indicated some falling off of customer regard for the company, for its employees, or with respect to the reasonableness of rates—all being attributed to the fact that face-to-face meetings between employees and customers have been greatly reduced in recent years.

Advances in the art of business procedures have contributed to the practicality and low cost of processing releases of a business nature to customers. Here, high-speed mechanization of all account information, and the stuffing and addressing procedures have advanced to the points where accounts can be handled just as expeditiously by envelope billing as in the postcard operation.

And, finally, the promotional opportunities through the utilization of billing inserts appear now to be more highly valued in relation to the coverage cost of other media. Not only can the inserts lead to new uses, they can contribute to overall gains by continuing to sell the value of present uses and pave the way for maximums of both of these through adequate wiring suggestions.

A Sampling of Replies

Here is a sampling of replies from companies now using envelope billing, or planning to convert to that type of billing within the near future.

Niagara Mohawk Power Corp., Syracuse, N. Y., which returned to envelope billing for its 910,000 customers in May, 1959, after having switched to postcards in 1942 due to wartime conditions, summed up the reason for its change as follows:

". . . For some time we have realized that other than meter readers and servicemen, we had no usual means of regularly communicating with our customers, and felt that something had to be done. We felt that there is an interesting story to tell, and our customers, for the most part, are willing to listen. We further recognize that the bill enclosure could be used as a sales help . . . to customers, concerning how to use appliances, and the general application of electricity in the home. We felt that these needs could much more adequately be communicated to our customers through bill inserts . . . than through other communication agencies."

F. T. McEvoy, Niagara Mohawk Power Vice President, said the company, in recognizing that there was no regular means of communicating with customers except for meter readers and servicemen, decided to return to envelope billing.

Northern States Power Co. included this promotional material item in envelope-enclosed bills of its 700,000 customers. The company, after using postcard billing system for 10 years, returned to envelope billing in July of last year.

While the need for communication was one of the primary factors in the switchover, several other reasons were cited by the company. Among them were:

- Provided a good opportunity to explain why companies may need rates changes, and to give detailed explanations when rate changes occurred, including the enclosure of rate cards, as required by the N.Y. Public Service Commission.
- The elimination of a serious customer irritant in having arrears amounts, particularly, but also others, go through the open mail.
- The bill insert has provided an excellent instrument for cooperating with certain selected public service programs, such as the Community Chest, Civilian Defense, etc.
- Although a regular practice is not made of it, the company does, whenever appropriate, include sales promotion items. The utility is careful not to clutter up the bill insert with too much material.

It is impossible to measure the exact effectiveness of bill inserts, NMP said, but it receives a considerable number of telephone inquiries concerning information contained in the envelopes. There have also been many complimentary comments from customers on the envelope plan.

Pacific G&E Supports Envelope Billing

Pacific Gas and Electric Co., San Francisco, Calif., which mails about 2,200,000 bills a month, said: "We at PG&E are staunch supporters of envelope billing for both public relations and advertising reasons. We find bill inserts so successful in accomplishing our objectives that we believe their use by more companies across the nation not only would help the other companies, but also the electric utility industry as a whole."

A. J. McCollum, Manager of Advertising and Publicity for the company, said PG&E mails about 2,200,000 bills a month. In addition to the bill itself, the envelope contains a return envelope—a service feature appreciated by the customers—a copy of the monthly customer-stockholder magazine, and at least one advertising insert.

Subject matter for inserts includes support for the utility's current appliance advertising campaign, plugs for the company-sponsored television show, service messages, Medallion Home tract promotions, and coupons for sales promotion contest entries, etc. In tract promotions, or Light for Living and model home announcements, the bill insert mailing is restricted to the immediate vicinity of the promotion. Postage for the entire package is four cents.

Mr. McCollum said that in a recent public opinion survey conducted for PG&E by Opinion Research Corp., one question produced evidence that bill inserts rank first among paid advertising media in public recall. ("Progress," the company's external magazine, which features institutional news about the company and industry, was recalled more frequently than any of the paid advertising media.)

Two Separate Studies

Customers were handed a card with this question: "Which of these ways of getting information about the company have you seen or heard in the last few months?" The card listed, in order, the following: newspaper advertising, television advertising, radio advertising, inserts that come with the gas or electric bill, "Progress"—the monthly magazine the company sends to you—other sources (specify), none of these, no opinion.

The question was asked in the company's combination territory and also, in a separate study, in Sacramento, where it is in the gas business only, competing with Sacramento Municipal Utility District.

"Progress," the monthly magazine, ranked first in the territory generally, with more than half—53 percent—mentioning it. In Sacramento, bill inserts ranked first, with 59 percent mentioning them.

The official score is as follows: (Note that many

customers mentioned more than one medium, thus the total is more than 100 percent.)

	Total PG&E Customers	Customers for Gas only (in MUD's)
PG&E "Progress"	53%	47%
Bill inserts	46	59
Television advertising	44	40
Newspaper advertising	35	45
Radio advertising	12	9

Mr. McCollum pointed out that the company used very little radio advertising.

Because bill inserts do produce results, Mr. McCollum said, the problem is to hold the line against using two inserts in the full run of bills. Two are used in about 20 percent of the run, and the pressure for more is constant—pressure from dealers, builders and others through the company's sales department, and from district and local managers, about new offices, new telephone numbers, etc.

"We regard bill inserts as the best advertising 'buy' we have," Mr. McCollum said, "for we get full-color messages into the hands of our customers each month for the mere cost of production. If we were to buy direct-mail service from a commercial house, the cost would be about 10 cents per insert—figured at 5 cents per name on a mailing list, 4 cents for postage, and 1 cent for production."

Northern States Power Returns to Envelope Billing

After 10 years of billing its customers by postcard, Northern States Power Co., Minneapolis, Minn., recently returned to envelope billing for two primary reasons: (1) the customers more and more had come to view their bills as a personal matter, and as such, should be handled more confidentially, and (2) the company felt a growing necessity to reach customers with more public relations information, as well as more sales promotion material.

Expecting customer use of electricity to double within the next 10 years, Northern States Power felt that there was a need for more public relations information among the customers. The company believed there was no better way of providing this information to some 700,000 customers than through bill inserts.

Last July, when NSP returned to envelope billing, the first insert explained this innovation. The letter stated:

"As you have noted, your bill was enclosed in an envelope this month. This policy will be followed in the future because we believe our customers feel a bill is a personal matter, and should be so treated."

About 75 percent of the customers approved the new type billing, but others were concerned that the increased cost of envelope billing eventually would result in a rate increase.

A second letter assured them this would not be the case. Part of the letter follows:

"A large majority have indicated that they do consider their electric bill a personal matter, and prefer the new policy. However, a considerable number have questioned whether the additional cost is justified and whether this will result in increased cost of service. Please be assured that this will have no effect on our rates. True, there will be a modest increase in cost—principally the 1 cent increase in postage—but there are offsetting savings . . ."

R. D. Furber, Director, Information and Advertising, Northern States Power, said that NSP plans to mail inserts with bills on alternate months during 1961. In January, the insert concerned Housepower; in March it will focus on "count your appliances"; in May, summer climate comfort; in July, taxes; in September, home lighting; and in November, increasing efficiency.

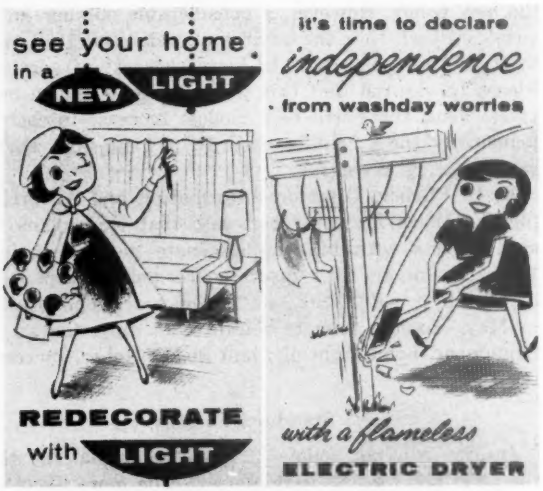
No Standard Format

Inserts will not follow a standard format, as the company believes the customers will be more likely to read them if they vary in color and shape each time.

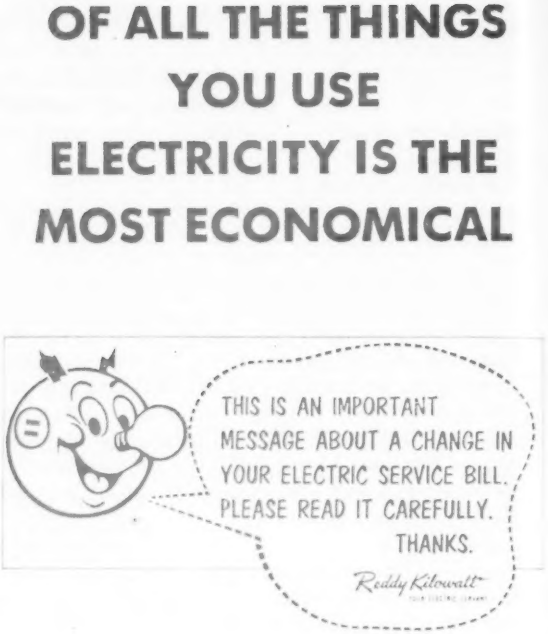
Mr. Furber pointed out that its return to envelope

This is the cover of a booklet which Northern States Power also sent to its customers. Using cartoon characters, the company told the story of the company while giving the customers a chuckle. This booklet was received with enthusiasm.

© NORTHERN STATES POWER COMPANY, 1960



Green Mountain Power Corp., Burlington, Vt., in its billing envelopes used the materials, above, to promote electrical appliances, and the use of lighting for decorating the home. When there was a rate reduction, the company notified its customers through another envelope insert shown at right.



billing with promotional inserts has had no effect on its radio, newspaper, and television advertising. Rather, it was noted, the company is using this program as an additional means of selling electricity and gas, and explaining various tax and industry problems. It also provides another outlet promoting greater customer appreciation of what they are getting for their money from Northern States Power.

Kentucky Utilities Always Used Envelopes

Kentucky Utilities Co., Lexington, Ky., has always used envelope billing, primarily because it mails with the bill the company house organ. The company serves many small, outlying communities and rural customers who receive relatively little printed material. Although H. W. Carloss, Director, Business Development for KU, said its surveys have not been intensive, the company feels that its bill inserts have high readership.

The Green Mountain Power Corp., Burlington, Vt., which has always used envelope billing also, feels that the envelope is an excellent advertising medium, and encloses some type of advertisement with the bill almost every month.

"We are planning to increase the use of inserts, as they appear to be our best means of advertising," said J. J. Davenport, Assistant Treasurer of the company. He feels that the customer is entitled to privacy in any communication between him and the company, and that the envelope provides an excellent medium for advertising.

Within the next year, Southern California Edison Co., Los Angeles, Calif., plans to convert a substantial portion of its accounts to envelope billing, although the cost will be about 22 percent to 28 percent greater than the current postcard billing. The company believes a closer contact with customers—both institutionally and promotionally—is possible through envelope billing.

Southern California Edison's advertising personnel believe that bill inserts are the most effective means of communication with the customers.

T. M. McDaniel, Jr., Vice President of SCE, pointed out some of the factors which prompted this decision:

- Only one machine run is required to prepare the bill. The new bill form contains on one side all billing information, together with name and address.
- Greater space is provided—with larger print—for printing the bill on a single side, with sales, customer relations, or other messages preprinted on the reverse side, if desired.
- Advertising, sales, and customer relations literature can be enclosed.
- A return envelope may be enclosed with each bill, which would enable the company to direct payments to any cash processing center.
- Either card or paper stock can be used for printing the bill.
- The customer is assured privacy in the matter of billing details.

Pennsylvania P&L to Use Envelopes

Pennsylvania Power & Light Co. is planning to convert to envelope billing this fall. Its case, while not unique, will serve to emphasize some of the considera-

ions involved in a decision of this nature. PP&L serves n a lightly settled area extending approximately 150 miles in both a north-south and an east-west direction. There is no metropolitan center to afford complete area coverage of newspaper, TV or radio advertising, or information releases. Several small units of such media must be employed, and even these accomplish only partial coverage. They are much more costly on a per-customer basis than would be the case with truly metropolitan outlets.

An Effective Means

PP&L pointed out that it would be practically impossible to assign a definite value to a communications medium that would reach all customers in support of all operating problems. However, the company believes there is a definite assurance that the envelope billing procedure is an effective means of doing the bulk of this job economically.

PP&L suggested two areas where billing enclosures may provide a definite service to the utility: the promotional and general business operations, and the customer-public relations opportunities.

In the promotional and general business operations area, the company pointed out that customer coverage is available through envelope billing to serve the following purposes:

- The convenience, economy and safety of electrical living in these respects: new applications of electricity in the home; new recipes and new uses for present appliances; adequate wiring benefits; medallion home construction; area development; safety hints for the homemaker.
- Anticipated "high bill" situations, seasonal variations, etc.
- Changes in meter reading dates.
- Rate changes, information on prorated bills.
- Changes in company addresses or telephone numbers.
- New or changed bill paying locations.
- Procedure on changing fuses, information on interruptions.
- Tree trimming, kinds of trees to plant, and the tie-in with interruptions.
- Suggested uses for the enclosed self-addressed return envelope.

Because the customers have little opportunity for direct association with the company and its employees, PP&L feels envelope billing will provide a medium to improve customer relations. Many area offices have been consolidated, thereby doing away altogether with direct company representation in certain communities. Customers are encouraged to mail bill payments to the general office, or pay bills to agents who collect for the company. Billing periods have been changed from monthly to bi-monthly. Services are left connected at vacated premises. Therefore, there is little opportunity for the customers to become acquainted with PP&L personnel.

An Additional Factor

In contemplating its conversion to envelope billing, the company, in addition to the foregoing factors, is supported by the feeling—frequently expressed by the customers—that they would prefer not to have their bills arrive "on public view."

Altogether, the company said, the obvious opportunity of reestablishing customer interest in an acceptance of the company and its operations via the first-class mail route, with complete customer coverage assured, seems to present a high-level approach, well within a reasonable cost.

H. M. Sawyer

H. M. SAWYER, 69, retired sales vice president of American Gas and Electric Co. (now American Electric Power), died March 5, after surgery at Robert Packer Hospital, Sayre, Pa.

Mr. Sawyer retired in 1952 after a 41-year sales career with AGE that began in 1911 with Scranton Electric Co., a former AGE affiliate in Scranton, Pa. He joined Scranton Electric after his graduation from Cornell University as a mechanical engineer.

In 1920, he was transferred to the New York office, after holding positions with Atlantic City Electric (another former affiliate) and Wheeling Electric. In New York he advanced from assistant to general contract agent, to vice president in charge of all sales efforts throughout the seven-state system.

Prominent in sales management, Mr. Sawyer served as chairman of the Sales Executives' Conference, and also as president of the Association of Edison Illuminating Companies. He served Edison Electric Institute, as chairman of many committees, and was one of the organizers of the Electric Companies Advertising Program (ECAP).

Accounting Conference to Be Held in St. Louis, April 17-19

THE 1961 National Conference of Electric and Gas Utility Accountants will be held in St. Louis, Mo., April 17-19, at the Chase-Park Plaza Hotels.

This conference is sponsored by the Accounting Division of EEI and the Accounting Section of the American Gas Association. W. T. Hamilton, Manager of the Commercial Services Department, The Cleveland Electric Illuminating Co., is Chairman of the EEI Accounting Division Executive Committee, and R. H. Johnson, The Brooklyn Union Gas Co., is Chairman of the AGA Accounting Section Managing Committee.

General Session on April 17

A general session in the Khorassan Room at the Chase Hotel on Monday morning, April 17, will open the conference. After the invocation, addresses of welcome will be offered by J. W. McAfee, President, Union Electric Co., and Judge R. W. Otto, Chairman of the Board, Laclede Gas Co., on behalf of the host companies.

Greetings from the associations will be made by Edwin Vennard, Institute Vice President and Managing Director, and by E. H. Smoker, First Vice President, AGA, and President, The United Gas Improvement Co.

Marvin Chandler, President, Northern Illinois Gas Co., will follow the general theme of the conference, "Performance and Profits," in his speech, and Tennyson Guyer, Director of Public Relations, Cooper Tire and Rubber Co., will discuss "People, Profit and Persuasion," in line with the conference theme.

The individual committees have developed interesting and valuable material which should appeal to personnel of both industries. Attendance by the industry accounting people is urged in order that they may hear presentations and participate in discussions of current problems and developments in their fields of activity. Committee and group sessions will be held on Monday afternoon, Tuesday morning and afternoon, and Wednesday morning.

Depreciation discussions will include speeches on the unit summation method of depreciation, computer applications in the field of depreciation, a panel discussion on new thoughts in depreciation, and the increasing factor of obsolescence. A panel discussion will be devoted to the economies of the timing of capital recovery. In the General Activities Group session, a presentation on price-level depreciation will be an important and timely item.

General accounting subjects on the conference program will include responsibility accounting and reports, a discussion of electronic accounting machine applications, the training and development of utility accountants, and consideration of leasing versus ownership. Manpower budgeting, accounting for accrued payroll, and a study of budgeting manuals are other general accounting topics to be covered. At the general activities session, a guest speaker from a public accounting firm will discuss new accounting developments.

A panel on audit information, changing trends in auditing, progress made in use of statistical sampling, work performance in clerical operations, and the effectiveness of responsibility and functional accounting will highlight discussions by the internal auditors during the conference. Dr. R. E. Seiler, University of Texas, will be guest speaker at the general activities session. His subject will be operational auditing.

Construction cost control and reporting, nuclear power station plant accounting problems, the application of electronic data processing to plant accounting records, and reimbursement for highway relocations are some of the projects to be considered by the Plant Accounting Committee. The committee's part in the general activities session will consist of a comprehensive presentation on similar units for multiple purposes, under the title, "Let's All Talk the Same Language." The committee is planning a luncheon on Tuesday, April 18. A color motion picture of particular interest to plant accounting personnel will be shown at this luncheon.

'Town Hall Meeting'

A full program of subjects of benefit to customer accounting people will include continuation of the "Town Hall Meeting" panel presentation, discussions on various practices applicable to estimated billing and hi-lo review, receipt and distribution of mail remittances, and newest applications of electronics for

customer accounting. Functions of the customer accounting department after conversion to a mechanical system, postal regulations with respect to customer billing, and a discussion of the new directory of customer accounting methods and equipment will also highlight the program. At the Customer Activities Group sessions, a study of customer accounting and collection expenses will examine a particular company's approach to this problem. R. E. Walker, The Cleveland Electric Illuminating Co., will also speak on training and supervision in the management of clerical work, which will also be repeated at the general activities session.

Customer collections subjects will include discussions of collection costs, a summary of collection practices of various companies, and a round table discussion of customer collection items. At the customer activities session, the effects of bi-monthly billing will be included in the program.

Other informative subjects, such as the question of whether district offices are preferred, higher bill inquiries, customer reaction to estimated bills, what is new in customer relations, and communication media in customer relations will be presented. Computer aids to customer relations will be discussed as one of the important adjuncts of electronics to our business. Automation versus humanics will be discussed, accenting the effect upon customer relations of the electronic systems currently used by utilities. Why customers appeal to higher authorities will be discussed as part of the customer activities session.

A forum, including such topics as the supervisor as a listener, what creates dissatisfaction in the office and "to rate or not to rate," will highlight accounting employee relations subjects on the program. The impact of electronic data processing on accounting employees will be the subject of a panel discussion, led by this group in another half-day session.

All sessions will be held in the Chase Hotel, except one on Monday afternoon, which will be in the adjoining Park Plaza Hotel. Six business machine manufacturers will demonstrate in the Exhibit Hall of the Chase Hotel their latest equipment—particularly electronic machines.

A social hour on Monday evening in the Chase Club will highlight the conference social activities. For the ladies who accompany registrants to the conference, a hospitality room, in charge of a hostess from the St. Louis Convention Board, will be maintained in the Park Plaza Hotel.

Registration for the conference will be from 2 p.m. to 5 p.m., Sunday, April 16, and from 8:30 a.m. to 5 p.m., Monday and Tuesday, April 17 and 18.

Landrith Is Appointed General Manager of Power & Light Exhibit

APPOINTMENT of Garland S. Landrith, Jr., as General Manager of Power & Light Exhibit, Inc., which will administer the investor-owned electric utility industry's participation in the New York 1964-1965 World's Fair, has been announced by Ernest R. Acker, President of P&LE, and Chairman of the Board of Central Hudson Gas & Electric Corp.

In his new assignment, Mr. Landrith will supervise arrangements and activities in connection with the designing, erecting, operating and maintaining of the industry's World's Fair exhibit.

Since joining EEI in 1957 as Assistant to the Assistant Managing Director, Mr. Landrith has worked on rate and legal matters, and has served as purchasing agent for EEI.

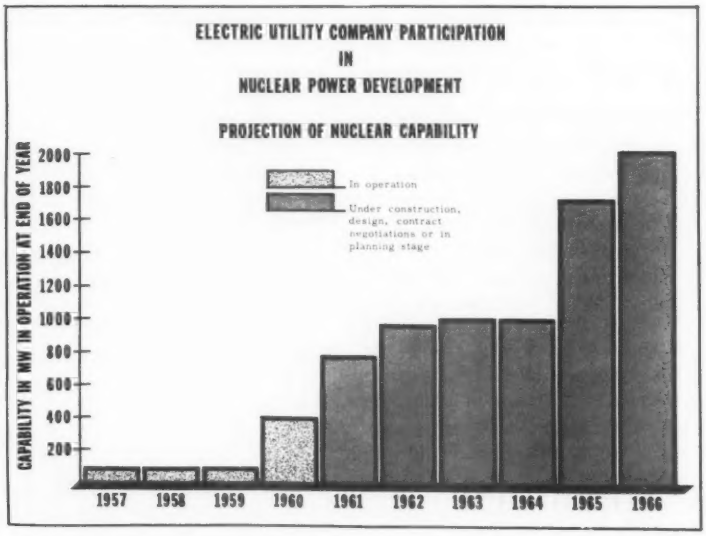
A graduate of the United States Military Academy at West Point, N. Y., in 1945, he received his master of science degree in mining engineering from the Colorado School of Mines in 1951. Following graduation in 1953 from the Advanced Officer Course of the U.S. Army Engineering School, he served as an adviser to the Chinese Army in Formosa until 1955.

After graduation from the Command and General Staff College of Fort Leavenworth, Kan., in 1956, Mr. Landrith taught engineering at West Point until he joined EEI in 1957.

GARLAND S. LANDRITH, JR.

Report to Congress:

129 Electric Utility Companies Participating in Atomic Projects



This chart shows the strides made by investor-owned electric utility companies in nuclear power development since 1957, and future plans.

ONE HUNDRED-TWENTY-NINE electric utility companies are participating either singly or in groups in 25 separate nuclear power projects aimed at attaining economically competitive nuclear power. The nuclear projects range from research and study groups to operation of plants already producing power. The electric utility companies' nuclear power development efforts involve utility expenditures of about $700 million.

These and other facts about the electric companies' nuclear activities were disclosed recently before the Joint Congressional Committee on Atomic Energy by William J. Clapp, President of Florida Power Corp., and Chairman of the Edison Electric Institute Committee on Atomic Power.

Investor-Owned Electric Utility Program

Mr. Clapp's testimony follows:

For some time now the nation's investor-owned electric utility companies have been actively engaged in a broad and diversified program for the development of economically competitive nuclear power. Some of the nuclear projects sponsored by electric utility companies have been entirely privately financed. Although this goal of economically competitive nuclear power has not as yet been attained, recent developments indicate that this broad and diversified approach is sound, and that the experience gained by electric utility companies will be a major contributing factor in the eventual attainment of competitive nuclear power.

During the past year the world's largest nuclear power reactor was placed in commercial operation on the system of an electric company. Another commercial-size nuclear power reactor, sponsored by a group of investor-owned electric companies, recently attained criticality, is now undergoing low-power testing, and will shortly go into regular operation ahead of schedule. In addition, three nuclear power plants in which electric companies are participants, are in operation, thus making a total of five operating reactors.

TABLE I—ELECTRIC UTILITY COMPANY PARTICIPATION IN NUCLEAR POWER DEVELOPMENT
Plants in Operation

Name of Participating Utility Co. and Plants	*Type of Reactor*	*Electrical Capacity of Plant-Kwe*	*Owner of Reactor*	*Operator of Reactor*	*Estimated Cost to Utility Organization*	*In Operation*
(1) Commonwealth Edison Co. (Dresden) *(a)*	Boiling Water —dual cycle	180,000 (net)	Commonwealth Edison Co.	Commonwealth Edison Co.	$36,300,000*(b)*	Aug., 1960
(2) Yankee Atomic Electric Co. (Yankee)	Pressurized Water	136,000 (net)	Yankee	Yankee	57,000,000*(c)*	1961*(d)*
(3) Duquesne Light Co. (Shippingport)	Pressurized Water	60,000*(e)* (net)	Atomic Energy Commission	Duquesne Light Co.	25,149,000*(f)*	Dec., 1957
(4) Pacific Gas & Electric Co. (Vallecitos)	Boiling Water —Prototype for Dresden unit	5,000	General Electric Co.	General Electric Co.	572,000*(g)*	Oct., 1957
(5) Southern California Edison Co. (Santa Susana)	Sodium Graphite	7,500	Atomic Energy Commission	Atomics International	1,697,000*(g)*	July, 1957

(a) Research and development expenditures of $15 million were paid by Nuclear Power Group, Inc.
(b) Exclusive of research and development expenditures paid by Nuclear Power Group, Inc.
(c) Final costs are expected to amount to less than the estimate.
(d) Critical Aug. 19, 1960, commercial operation 1961.
(e) Initial net capacity, ultimate of 100,000-kw gross expected.
(f) Includes $20.15 million for the conventional portion of the plant and the site, and $5 million toward cost of reactor.
(g) For turbo-generator portion.

Seven company-sponsored projects are under construction, two are under design, one is under contract negotiations, and two are in the planning stage.* The reactors under contract negotiations or in the planning stage are of large size, and are being considered in competition with conventional units of equivalent size, again demonstrating the progress being made in the development of nuclear power. In total, these 17 nuclear power projects will involve estimated utility expenditures of about $700 million, and will aggregate some 2 million kw of capability.

A number of utility companies, in collaboration with Davison Chemical Co., are engaged in a study to explore the economic feasibility of a commercial nuclear fuel reprocessing facility. Preliminary results from this study indicate that such an undertaking will be economically feasible in the near future, when an adequate volume of fuel for reprocessing is available. The group is continuing its efforts leading toward the building of a commercial project.

Investor-owned electric companies are also participating in eight other nuclear research, development, and study projects, involving substantial expenditures. Some of these will no doubt lead to additional reactor construction projects. As of the end of 1960, utilities have spent on these and the previously mentioned nuclear power projects approximately $346 million. In all, 129 utilities are participating in these programs. Some of these companies are shown in the accompanying tables, together with status reports on the utility nuclear reactor projects. Separate statements are being filed by some of these utility groups.

Today the investor-owned utility industry is operating, building, designing, or investigating seven different reactor types. Utility research and study groups have investigated, and will continue to investigate, new promising reactor concepts, thereby contributing to the diversity of the utility industry program.

Progress During Past Year

As previously stated, a large investor-owned electric company-sponsored project began commercial operation during the past year. Another one attained criticality, began low-power test operation, and is expected to go into regular operation shortly. The seven major electric utilities in New York State also announced during the year a definitive program looking toward the development, design, and ultimate construction of

* Projects in which electric utilities are participating:

In Operation
1. Dresden
2. Yankee
3. Shippingport
4. Vallecitos
5. Santa Susana

Under Construction
6. Indian Point
7. Pathfinder
8. Humboldt Bay
9. Enrico Fermi
10. Parr Shoals
11. Saxton
12. Big Rock Point

Under Design
13. ECNG-FWCNG
14. Peach Bottom

Under Negotiations
15. Southern California Edison Co.

Planning
16. New England Electric System
17. Pacific Gas and Electric Co.

Study, Research & Development Groups
18. ESADA
19. TAERF
20. SWAEA
21. APDA
22. ECNG
23. NPG
24. Rocky Mountain-Pacific Nuclear Reserve Group
25. San Diego Gas & Electric Co.

a large nuclear power plant. One large utility was proceeding with negotiations to build a large nuclear plant that would be competitive with a conventional unit of similar size over its lifetime. Major progress was achieved on other projects already underway.

The 180-mw Dresden nuclear power plant has operated at various power levels, and has demonstrated ease of operation, and rapid response to system load requirements since starting commercial operation in August, 1960. Dresden's operating characteristics have in general exceeded expectations.

Recently a metallurgical problem of a non-nuclear nature developed, involving part of the control rod mechanism. The plant has been shut down, while corrective measures are undertaken. However, problems of this type are to be expected and can, in fact, be a source of additional knowledge in our determination to achieve economically competitive nuclear power. The utility industry has experienced problems with new advanced designs of major conventional equipment in the past and as recently as last year, but has benefited from them through the experience gained in searching for and applying corrective measures. We are confident that such will be the case with our nuclear power plant experiences.

The 136-mw Yankee project, which attained criticality in 1960, is likewise providing the utility industry with valuable information that will assist in the future design and construction of competitive nuclear power plants. The test operation is a bit ahead of schedule, and the expenditures for the plant are materially within the cost estimate. Experience to date indicates that the plant's performance will somewhat exceed specifications. This is welcome news, as is the fact that experience in the construction stage has pointed the way to future design refinements. In addition, the Yankee project has been helpful in assisting the operators of similar type foreign reactors. Pressurized-water reactor projects in Italy and Belgium have been aided by on-the-job work assignments with the Yankee group.

Shippingport recently marked its third operating anniversary. During this period, valuable information has been obtained on the technical problems associated with the operation and maintenance of nuclear power plant systems and equipment. The plant has demonstrated certain operating characteristics the equivalent of or better than those in conventional stations.

Unit power costs have been computed. Although they are not meaningful in any comparison of Shippingport and a conventional plant, because of Shippingport's dual purpose of operating power plant and test facility, they are helpful in making future cost estimates. This is but another example of the knowledge the utility industry is helping to accumulate.

Shippingport has for several years served as a training facility for supervisors and technical personnel of other nuclear power plants, both in the United States and in other countries. Information on the operation of Shippingport is available on a current basis in the form of monthly operating reports.

The experience the utility industry is gaining with these three large reactors, plus the two smaller experimental reactors operating at Vallecitos and Santa Susana (in which investor-owned utilities are participants) is providing a solid foundation of knowledge upon which the electric utility can draw to direct its efforts in such a manner that competitive nuclear power will be available when needed in this country.

TABLE II—ELECTRIC UTILITY COMPANY PARTICIPATION IN NUCLEAR POWER DEVELOPMENT
PLANTS UNDER CONSTRUCTION

	Name of Organization and Plant (a)	*Type of Reactor*	*Capacity of Plant, Kw Electric*	*Location*	*Est. Cost to Utility Org.*	*In Operation by*
(6)	Consolidated Edison Co. of N. Y., Inc. (Indian Point)	Pressurized Water-thorium-uranium converter	275,000	Indian Point, N. Y.	$100,000,000	1961
(7)	Northern States Power Co.-Central Utilities Atomic Power Associates (Pathfinder)	Boiling Water with internal nuclear superheater	66,000	Sioux Falls, S. D.	22,800,000	1962
(8)	Pacific Gas & Electric Co. (Humboldt Bay)	Advanced Boiling Water	60,000	Eureka, Calif.	21,000,000	1962
(9)	PRDC-Detroit Edison Co. (Enrico Fermi)	Fast Breeder	100,000	Monroe, Mich.	84,250,000	late 1961
(10)	Carolinas Virginia Nuclear Power Associates (Parr Shoals)	Pressurized Water-pressure tube, heavy water moderated	17,000 (net)	Parr, S. C.	29,000,000	1962
(11)	Saxton Nuclear Experimental Corp.	Water type	5,000	Saxton, Pa.	8,520,000	1961
(12)	Consumers Power Co.	Boiling Water, High Power Density	50,000	Big Rock Point, Mich.	30,000,000	1962

TABLE III—ELECTRIC UTILITY COMPANY PARTICIPATION IN NUCLEAR POWER DEVELOPMENT
Estimate of Expenditures by Electric Utility Companies for Nuclear Power Development(a)

	1956 and Earlier	*1957*	*1958*	*1959*	*1960*	*1961*	*1962*
Expenditures for Plants *(b)*	36,908,000	34,777,000	50,621,000	99,535,000	107,348,000	79,266,000	41,736,500
Other Expenditures *(c)*	3,598,000	2,648,000	4,379,000	2,603,000	3,766,000	5,807,500	4,952,000
Total by Years	40,506,000	37,425,000	55,000,000	102,138,000	111,114,000	85,073,500	46,688,500
Cumulative	40,506,000	77,931,000	132,931,000	235,069,000	346,183,000	431,257,000	477,945,000

(a) Based on information obtained from the major nuclear power groups and previous surveys made by Edison Electric Institute.

(b) Estimate of expenditures by electric utility organizations for the following plants in operation, under construction or contract, including accompanying research and development work, but exclusive of operating costs:

Dresden	Vallecitos	Pathfinder	Parr Shoals	ECNG-FWCNG Project
Yankee	Santa Susana	Humboldt Bay	Saxton	Peach Bottom
Shippingport	Indian Point	Enrico Fermi	Big Rock Point	

(c) Includes expenditures by individual companies and groups of companies for nuclear power study, research and development. These figures do not include expenditures associated with any of the projects listed in (b) above. Included in this category are the following groups:

Empire State Atomic Development Associates
Texas Atomic Energy Research Associates
Southwest Atomic Energy Associates
Nuclear Power Group
Rocky Mountain-Pacific Nuclear Research Group
Atomic Power Engineering Group (up to 1959)
Pacific Northwest Power Co. Group
Pennsylvania Power & Light Co. Project (up to time of cancellation)
Pioneer Service & Engineering Group

Sometime during the remainder of 1961 it is expected that two more large utility-sponsored nuclear power plants, Indian Point and Enrico Fermi, and the smaller Saxton experimental nuclear power reactor will commence operation, provided, of course, that operating licenses are granted. In addition, the Fermi construction permit is still involved in judicial proceedings before the United States Supreme Court.

Indian Point to Be Completed This Year

Construction of the Indian Point plant of Consolidated Edison Co. of New York, Inc. is scheduled for completion in mid-1961. Operation of the plant is scheduled for the fall of this year. Thus, at the conclusion of the year, it is hoped that five utility-size nuclear power plants will be in operation. They will include four water and one non-water type reactors.

The Southern California Edison Co. has reached a preliminary understanding, and is in the course of negotiating definitive agreements with Westinghouse Electric Corp. and Bechtel Corp. for the construction of a 375,000-kw nuclear reactor plant at an estimated cost of $78 million. Construction of the project is dependent upon completion of the negotiation of such agreements, the negotiations with AEC of satisfactory contracts covering research and development, and waiver of fuel use charges, and the acquisition of a satisfactory plant site.

Erection and initial testing of the reactor containment has been satisfactorily completed for the Big Rock Point 50,000-kw nuclear plant. This Consumers Power Co. plant is scheduled for 1962 completion of construction.

Progress on the other construction or design projects generally is proceeding according to schedule. Most of them have obtained their construction permits, and started construction.

Various other utility groups continue research and development, and study projects. During the year, one of these groups comprising the seven major electric utilities in New York State announced plans to conduct a two-pronged development program on advanced concepts of two types of nuclear power plants, which show promise of achieving overall production costs economically competitive with those of fossil fuel plants in upper New York State. The seven utilities, through a membership corporation known as Empire State Atomic Development Associates, Inc., (ESADA) will support research on nuclear superheat, under contract with General Electric Co., and on the high-temperature, gas-cooled reactor, under contract with General Atomic Division of General Dynamics Corp. The sponsor companies of ESADA state that they will finance, construct, and operate a large size (300,000-500,000-kw) nuclear generating station if, as they expect, the results of the research and development program indicate power costs competitive with those of conventional steam plants. This is a significant undertaking, and exemplifies the interest of investor-owned utilities in the research and development aspect of nuclear power development.

Support for Nuclear Fusion

The Texas Atomic Energy Research Foundation continues to support research and development in the field of nuclear fusion, and has during the year renewed its agreement with General Dynamics Corp. for a continuation of the research program for four years after the April 30, 1961, expiration date of the original contract. Substantial progress has been made in temperatures, instrumentation, and understanding, which tend to substantiate the hope that controlled fusion is a reasonable, although difficult, goal.

Recently a critical assembly for the advanced epi-

thermal thorium reactor research and development program sponsored by Southwest Atomic Energy Associates became operative. The machine will be used to determine the amount of fuel, moderator, and other material required for the core of a power reactor. While there are no present plans to build a full-scale nuclear power plant, the accomplishments indicate that this concept offers substantial promise as an economical heat source for the generation of electricity.

During the year the research and development program for the proposed gas-cooled prototype nuclear power plant of the East Central Nuclear Group and Florida West Coast Nuclear Group was reoriented toward earlier development of beryllium-clad fuel elements, and their use in the prototype. Previous research contemplated stainless steel in the interest of an early construction date. This change necessitated a reorientation of a considerable part of the research program. Although this has resulted in a delay in possible plant construction dates, it will, in the final analysis, assure more and quicker progress for a natural uranium reactor concept by the use of low neutron absorbing cladding material.

Evaluation of Progress

The operating projects sponsored by the investor-owned companies have been instrumental in proving the technical feasibility of operating large power reactors on a utility system. Furthermore, we have gained construction and design experience on utility-size nuclear power plants, which is so essential to the ultimate goal of economically competitive nuclear power. We are now in a position to gain additional experience in the operation of a nuclear power reactor in meeting the daily load requirements, and also in such important areas as maintenance, fuel loading, and waste disposal. Many utilities have their engineers working directly on utility group-sponsored projects. These engineers have performed duties in decision-making positions and their acquired experience will assist their companies in future nuclear power projects. This continual accumulation of knowledge in all phases of nuclear power development will be indispensable in designing and constructing future nuclear power plants and in training operators for these plants.

For National Interest and Sound Economics

Thus, the experience to date confirms our belief that as a matter of both national interest in bringing their operational experience to bear on the problem and of sound economics, commercial-type power reactors should be built, owned, and operated by utility systems.

At the same time, the utility program continues to stress research and development and the investigation of new reactor concepts. The utility industry is investigating, designing, building or operating seven different reactor types. Research and study groups of the industry will undoubtedly investigate other concepts. This should assure us of orderly development, with actual construction consistent with research achievements. On the basis of the experience we have gained, we believe, as we indicated in last year's testimony, that "large-scale reactors of any type generally should be installed only when there is reasonable assurance that a sponsoring utility system can produce electric power with the proposed nuclear plant substantially competitive with power generated from a similar-sized conventional unit in the same area."

EEI Atomic Power Committee

W. J. Clapp (Chairman), President, Florida Power Corp.
J. K. Busby, President, Pennsylvania Power & Light Co.
J. H. Campbell, President, Consumers Power Co.
W. L. Cisler, President, The Detroit Edison Co.
C. B. Delafield, Vice President, Consolidated Edison Co. of N. Y., Inc.
E. H. Dixon, President, Middle South Utilities, Inc.
P. A. Fleger, Chairman of Board, Duquesne Light Co.
Willis Gale, Chairman, Commonwealth Edison Co.
R. E. Ginna, Chairman of the Board, Rochester Gas & Electric Corp.
A. S. King, President, Northern States Power Co.
E. L. Lindseth, Chairman of Board, The Cleveland Electric Illuminating Co.
J. W. McAfee, President, Union Electric Co.
Harold Quinton, Chairman of the Board, Southern California Edison Co.
R. G. Rincliffe, President, Philadelphia Electric Co.
Philip Sporn, President, American Electric Power Co.
J. B. Thomas, President, Texas Electric Service Co.
William Webster, President, New England Electric System

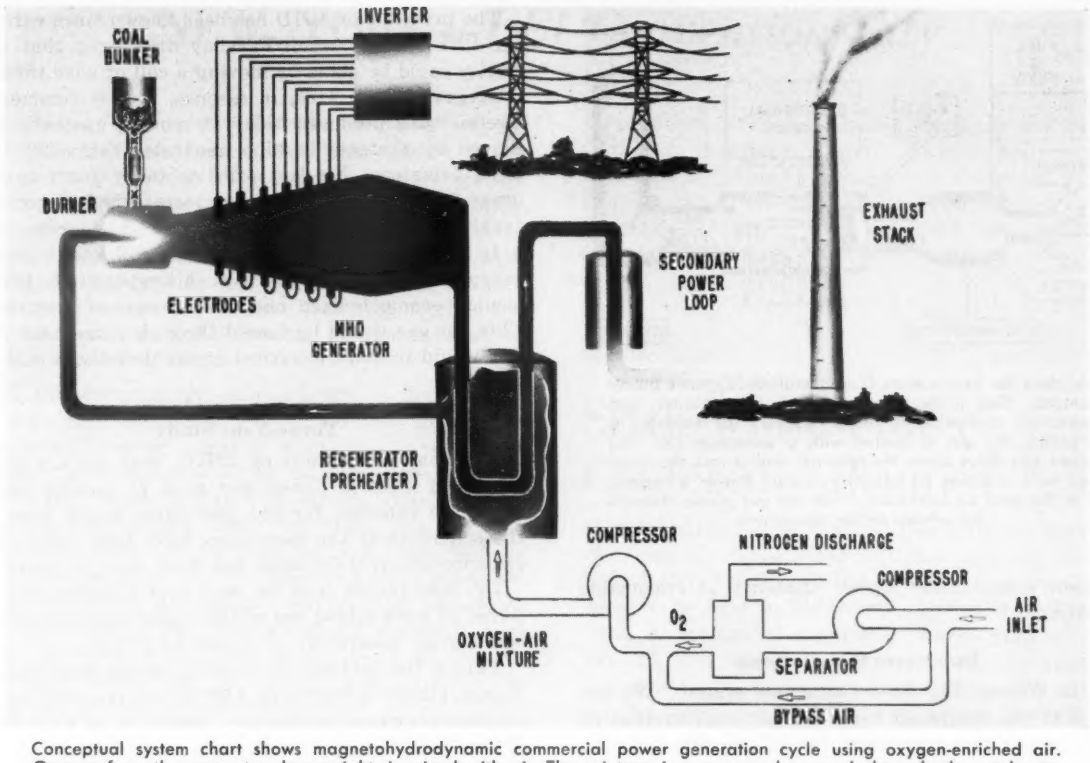
Conclusions

Progress to date in the United States program of civilian nuclear power development has been substantial. Furthermore, a program which stresses research and development on a broad basis, with construction consistent with research achievements, is both proper and necessary for the attainment of both our domestic and international objectives. We further continue to believe that prototypes should be built, preferably by and on utility systems, to demonstrate the technical feasibility and economic merits of promising new reactor concepts or modifications. Large-scale reactors of any type should meet the test of substantial competitiveness.

Government's role in civilian nuclear power activities should be limited to the fostering of research and development, and the investigation of promising reactor concepts. In fulfilling this role, government should use the services of the electric utility industry to the maximum extent possible.

As we have testified in previous years, Section 44 of the Atomic Energy Act of 1954, which discriminates in the disposal of electric energy generated at government-owned experimental nuclear power facilities, should be amended. Also, the preference clause in

(Continued on page 94)



Conceptual system chart shows magnetohydrodynamic commercial power generation cycle using oxygen-enriched air. Oxygen from the separator, lower right, is mixed with air. The mixture is compressed, passed through the preheater and burned with coal to produce a high-temperature, electrically conducting gas. Gas then passes through magnetic field within the generator to create d.c. power, which is extracted on the electrodes. The d.c. power then is changed to a.c. in the inverter and transmitted.

Major Advance for MHD Seen in New Experimental Generator

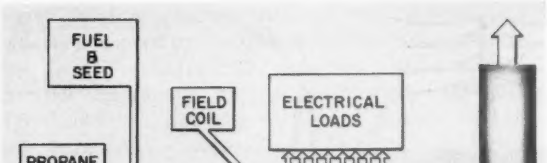
PROSPECTS for commercial electric power generation through the revolutionary magnetohydrodynamics (MHD) system advanced significantly this month with the announcement that 205 kilowatts of power have been produced in a new MHD generator at the Avco-Everett Research Laboratory, Everett, Mass. This is 20 times greater than the power output achieved when the project was first revealed late in 1959.

At the same time it was disclosed that two additional leading utility companies have been added to the 10 which originally joined Avco in the MHD power studies, and that the budget for the current year's experiments has been tripled to $1,200,000.

This announcement was made jointly at a news conference by Avco Corp. and American Electric Power Service Corp., in behalf of the 12 leading utilities associated with Avco in underwriting the MHD power studies.

Philip Sporn, President of American Electric Power, said, "Magnetohydrodynamics is probably the most exciting area of development in power generation today. A little more than a year ago 10 utility companies, three of them in the American Electric Power system, entered into an agreement with Avco for a research program for the application of MHD to the mass generation of electric energy, which could improve the efficiency of power plants by as much as 40 percent.

"This program," Mr. Sporn added, "has yielded results more favorable than we could have reasonably expected at the end of 1959. The original idea, first investigated by Michael Faraday some 150 years ago, has been carefully tested against today's more sophisticated knowledge of high temperature gas properties as a result of Avco's intense space exploration program. This exciting idea has stood up well in the analytical and experimental work completed this year, and studies continue to affirm that the MHD power system



Flow chart for Avco's Mark II magnetohydrodynamic power generator. Gas is heated to 5000 F in a burner (gas generator), similar to a rocket engine. To increase its ionization, the gas is seeded with a potassium salt. The ionized gas flows down the channel and across the magnetic field, creating an electric voltage. Power is tapped off to the load by electrodes, while the gas passes through the exhaust to the atmosphere.

promises considerably higher efficiency at reasonable capital costs."

Important Results Seen

K. R. Wilson, Jr., Avco Chairman, stated, "We are sure that the continued studies, additional support of which is now being provided by an augmented group of 12 utility companies, will yield important results."

New utilities participating in the project are the Boston Edison Co. and The United Illuminating Co.

Original sponsoring companies, all of which are continuing with Avco in the MHD program are: Appalachian Power Co., Central Illinois Light Co., The Dayton Power and Light Co., Illinois Power Co., Indiana & Michigan Electric Co., Indianapolis Power and Light Co., Kansas City Power & Light Co., Louisville Gas and Electric Co., Ohio Power Co., and Union Electric Co. (Appalachian, Indiana & Michigan, and Ohio Power are subsidiary companies of American Electric Power Co.)

The new Mark II generator now in operation at the Avco-Everett Research Laboratory is believed to be the most advanced generator in the country. Dr. Arthur Kantrowitz, Avco Vice President and Director of the Laboratory, said the new generator, after further development, will be capable of producing upwards of 500 kw of power for the time periods necessary to evaluate engineering problems associated with the system. The project is under the direction of Thomas Brogan, principal research scientist at Avco-Everett.

Steam Turbine Cycle Eliminated

One basic difference between an MHD generator and the present conventional electric generator is that part of the costly steam turbine cycle would be eliminated and much heavy equipment would be unnecessary.

The principle of MHD has been known since early in the 19th century when Faraday discovered that electricity could be made by moving a coil of wire through a magnetic field. This, in essence, is how commercial electricity is produced today. A moving magnetic field driven by a steam turbine generates electricity in a fixed armature. Electric utilities today burn coal or other fuel to heat water into steam, which drives the turbine.

In the MHD system, the burning coil, oil, or atomic energy, would heat a gas to such temperatures that it would become ionized and a conductor of electricity. This hot gas would be forced through a magnetic field and would produce electrical power directly in a static circuit.

Three-Year Study

Avco has been studying MHD, both as a possible source of electric power and as a propulsion source for space vehicles, for the past three years. Some of the scientists at the laboratory have been conducting experiments in these fields for more than 10 years.

Dr. Kantrowitz said the past year's studies are believed to have solved one of the major problems facing commercial generation of power by MHD.

This is the problem of material versus temperature. Temperatures in excess of 4,000 F are required before combustion gases can become conductors of electricity. With this requirement it was necessary in Avco's original power cycle to preheat the combustion air in excess of 3,000 F for efficient operation of the MHD plant. Materials capable of withstanding temperatures high enough to preheat the combustion air have not been developed.

To solve this problem, Avco scientists, in cooperation with AEP, studied power cycles, where the combustion air is enriched with oxygen before being fed to the preheater and combustion chamber. The use of oxygen reduces preheat requirements to the point where a conventional material, such as stainless steel, can be used. The new cycle yields performance and economics comparable to those of the original air cycle.

New Design of Generator Not Needed

This use of an "oxygen cycle" now means that regenerators (preheaters) currently available commercially can be employed in the MHD system, and it will not be necessary to design a new generator.

Dr. Kantrowitz said, "Now that auxiliary components of the MHD power plant already exist, only the generator itself requires further development."

In the generator now being used by Avco, the plasma, or hot gas, is provided by a combustion chamber similar to a rocket thrust chamber which burns a mixture of kerosene or alcohol and gaseous oxygen "seeded" with powdered potassium salts to make the plasma a better electric conductor. The plasma enters the generator at about 5,000 F.

NEW YORK—*EEI Convention City*

(Continued from page 74)

writers, and for numerous attractive and small shops.

New York's Times Square area, from 42nd St. to the 50's, probably contains more theatres—motion picture and legitimate—than any other area in the world. Forty-second St., between Broadway and Eighth Ave., is a fantastic mixture of all-night movie houses with blazing lights, hot-dog and pizza "palaces," bargain stores, and amusement parlors, featuring fortune tellers, flea circuses, and a number of games based on the miniature bowling principle.

Off Broadway, in the 40's and 50's, is the heart of the American legitimate theater, an area that comes vividly to life every night at 8:30. This is where the greats of show business—Mary Martin, Ethel Merman, Lucille Ball, Henry Fonda, Phil Silvers, Julie Andrews —among others—and those who would be great hold forth six nights and two afternoons a week. This is where the theatrical diet for the nation and a good part of the free world is prepared. Several years ago, when Eugene O'Neill's "The Iceman Cometh" opened in New York, reviewers came from as far away as Sydney, Australia. When "My Fair Lady" was unveiled five years ago, so many critics were on hand—from all over the United States, and several foreign countries—that the management was forced to schedule a second night press section.

Most of the city's first-run motion picture theaters also are located on Broadway, between 43rd St. and 51st St. Radio City Music Hall, the world's largest indoor theater, with a capacity of 6,200, is located on Sixth Ave. and 50th St. in Rockefeller Center.

The Metropolitan Opera is one of the finest in the world. Its current season opened Oct. 24, 1960, and will extend through April 15. The New York City Opera Co. has short fall and winter seasons. Both the Metropolitan and City Operas tour major U. S. cities after their New York seasons. The New York City Center, which operates the City Opera Co., also has light opera and ballet companies.

The New York Philharmonic Orchestra, which has as its permanent conductor Leonard Bernstein, is one of the outstanding orchestras of the world.

New York has many famous and interesting churches. Trinity (Episcopal) Church, Broadway and Wall Sts., is a Gothic brownstone structure completed in 1846. St. Paul's Chapel of Trinity Parish (Episcopal), Broadway and Vesey St., is the oldest colonial church edifice in New York. It was opened in 1776, and its bell has tolled the hours since 1797. After George Washington was inaugurated President in 1789, he and the Congress walked to this chapel for services. St. Patrick's Roman Catholic Cathedral, Fifth Ave., between 50th and 51st Sts., is considered one of the finest Gothic structures in the nation. On Morningside Heights, at Amsterdam Ave., and West 112th St., is the Cathedral of St. John the Divine, a beautiful Episcopal church. When completed, its tower will be 445 feet high. Riverside Church (Interdenominational), Riverside Drive and 122nd St., was completed in 1929 from French Gothic designs. The tower, reminiscent of Chartres, is 100 feet wide, rises 392 feet, and has 22 stories for church activities.

Sixth World Power Conference Planned

THE United States National Committee of the World Power Conference has initiated planning for participation in the Sixth Plenary Meeting of the Conference, to be held in Melbourne, Australia, Oct. 20-26, 1962. At its annual meeting in Washington, D. C. on Jan. 23, 1961, the United States Committee appointed a committee on papers to select authors and subjects for the technical papers to be submitted by the United States at the Melbourne Meeting.

W. L. Cisler, President, The Detroit Edison Co., represents the EEI on the U. S. National Committee of the World Power Conference, with H. E. Bumgardner, Assistant to President, The Detroit Edison Co., as alternate.

The theme selected for the 1962 Plenary Meeting is "The Changing Pattern of Power." Development of this theme is expected to emphasize the changes that have taken place in all power production, transportation, and utilization techniques since the Fifth Plenary Meeting in 1956, and to include forecasts of expected future developments.

The United States Committee, one of 59 National Committees from all over the world making up the membership of the World Power Conference, is composed of three major groups of participating members. They are: (1) the professional engineering societies, currently including the American Society of Civil Engineers, the American Institute of Mining, Metallurgical and Petroleum Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and the American Institute of Chemical Engineers; (2) the industrial, utility, or similar associations, comprised of the Association of Edison Illuminating Companies, Edison Electric Institute, and the American Gas Association; and (3) the Federal and state government bodies, composed of the Atomic Energy Commission, Federal Power Commission, Bureau of Mines, and Bureau of Reclamation of the Department of the Interior, the U. S. Army Corps of Engineers, and the Department of Agriculture's Rural Electrification Administration.

Purchasing and Stores Meeting Planned in Houston, May 14-15

WITH the theme "Improving Materials Management Efficiency and Costs," the EEI Purchasing and Stores Committee is planning a program of subjects and material for its 14th Annual Meeting, which should attract the interest of purchasing agents, storekeepers, and their associates in the industry companies. The meeting will be held May 15-17, at the Shamrock Hilton Hotel in Houston, Texas.

On Monday morning, May 15, following an address of welcome to Houston by T. H. Wharton, President of Houston Lighting & Power Co., R. B. Gear, Commonwealth Edison Co., Chairman of the EEI Purchasing and Stores Committee, will present brief opening remarks and introduce the morning session chairman. The morning session will cover such subjects as utilization of local vendors' stocks ("Do you know your own costs?"), inspection, and disposal of dormant items. In addition, a material handling motion picture, specially prepared to show equipment in action, will conclude the morning program.

A luncheon is planned for Monday noon. Following the luncheon, W. M. Hurley, Executive Vice President, Houston Chamber of Commerce, will address the group on "Community Leadership."

The Monday afternoon session will offer a progress report on the timely and important subject of measurement of stores performance, pointing to the question, "Where does your company fit?" This will be followed by a discussion of the organization and maintenance of a library, and source-of-supply file. Reports of the important Standard Packaging and Materials Standard Liaison Subcommittees, indicating the current status of these projects, will conclude the afternoon session.

Two-Part Subject

On Tuesday, May 16, the morning session will open with a two-part subject—trends in minor materials and special categories, and control of small tools. A discussion period will follow. The second presentation will be devoted to automatic purchasing—a new idea. Practical material requirement forecasting will be approached from the stores and purchasing angles. This should point up the important factor of inter-departmental coordination.

A luncheon is planned also for Tuesday noon. H. F. Staacke, Vice President, Houston Lighting & Power, will address the luncheon group on purchasing and stores cooperation with the sales department.

Two projects are scheduled for the Tuesday afternoon session. One, purchasing practices reviewed, will consider the approach of getting the job done smoothly and efficiently. The second, purchasing performance at its best, asks the question, "Is it measurable?" Discussions on the various presentations promise to make the program timely and valuable. A short business meeting will conclude the Tuesday afternoon session.

An interesting tour is planned for Wednesday morning, with an early departure by bus from the hotel to the Turning Basin pier, for a boat trip down the Ship Channel to the San Jacinto Battleground pier. Here the delegates and guests may inspect or visit either the San Bertron power plant of Houston Lighting & Power, the San Jacinto Monument and Museum, or the battleship "Texas." Luncheon will be at the San Jacinto Inn.

The program also includes a dinner on Monday evening, with local music and entertainment. For the ladies, a garden tour and luncheon are planned for Tuesday, May 16.

Registration for the annual meeting will be from 2 p.m. to 5 p.m., Sunday, May 14, and from 8:30 a.m. to 5 p.m., Monday and Tuesday.

Wood Pole Conference Slated

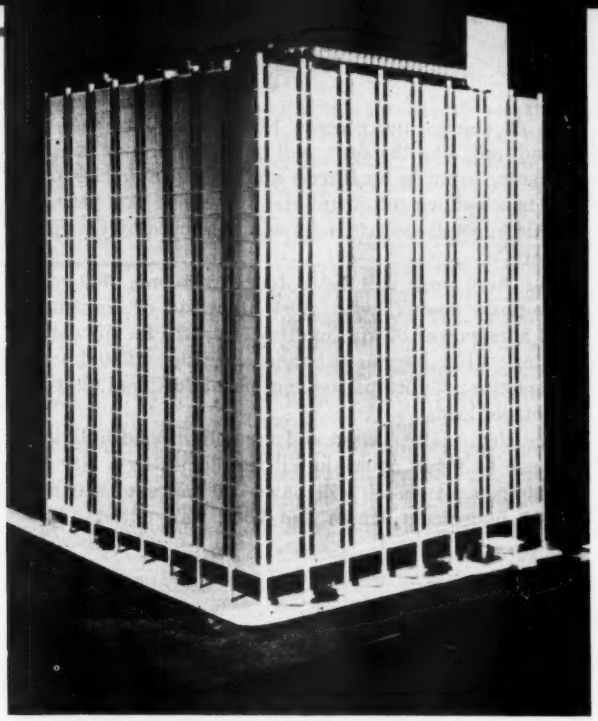
THE Wood Products Department of the North Carolina School of Forestry will sponsor "The South Atlantic Wood Pole Conference" at Raleigh, N. C., on April 5-6. The conference will be held in the Student Union on the campus of the North Carolina State College.

A comprehensive program of basic technology and current information on the production, deterioration, preservative treatment, purchasing, inspection and maintenance of wood utility poles will be presented.

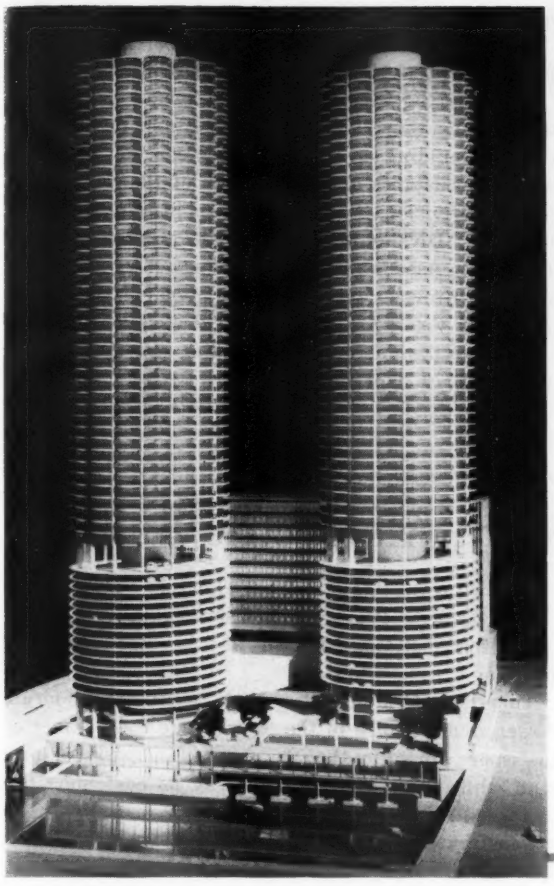
Technical papers which will also be pre-printed and bound will be presented by industrial educational and governmental specialists and researchers.

Management and technical personnel in operating utilities, and other users of treated wood products, as well as manufacturers of treated wood products—those who want information on which to make and carry out sound economic operating decisions—will find the conference of particular value.

The conference is open to all interested persons. Persons wishing to attend the South Atlantic Wood Pole Conference may obtain copies of the conference program and advance registration by writing to the Wood Products Extension Section, 266 Kilgore Hall, North Carolina State College, Raleigh, N. C.



The Atlanta Merchandise Mart, 23-story all-electric building, which is expected to be completed in May, will be one of the world's largest all-electric structures. It will be served by Georgia Power Co. The mart will occupy 23 acres.



Marina City, 60-story, all-electric, twin apartment buildings, will be completed in 1962 in Chicago. Marina City, to be served by Commonwealth Edison Co., will rise 585 feet and contain 896 apartments. Garages will occupy first 19 floors.

60-Story Twin Hotel in Chicago, Atlanta Mart to Be All-Electric

CONSTRUCTION has started on the all-electric Marina City, 60-story, twin apartment towers in Chicago.

The $36 million structure, which will be served by Commonwealth Edison Co., is believed to be the largest all-electric project of its kind. The residential and commercial development will rise on the north bank of the Chicago River, between State and Dearborn Sts. Completion is expected in 18 months.

Marina City will consist of two apartment towers, described by the architect, Bertrand Goldberg, as the tallest apartment buildings in the world, and a 10-story commercial building to the north that will provide office and recreational areas.

The twin structures will rise 585 feet and contain 896 apartments. There will be 32 floors of efficiency and one-bedroom apartments, and eight floors of one-bedroom and two-bedroom, two-bath apartments. Each all-electric apartment will be equipped with baseboard heating, range, individual quick-recovery water heater, air conditioning, and disposal unit. Garages will occupy the first 19 stories of each twin tower.

Recreational attractions will include a bowling alley, swimming pool, skating rink, exhibition hall, theater, restaurants, and cocktail lounges, plus specialty shops. At the river level a marina will accommodate 700 small pleasure boats. It is from the latter facility that the project got its name.

Merchandise Mart Under Construction

The Merchandise Mart, now under construction in Atlanta, also will be one of the largest all-electric buildings in the world. The mart's first unit, rising at Peachtree and Harris Sts. in the Georgia capital city, will

nave 23 stories and contain 1,000,000 square feet. A second unit, like the first, will be erected on adjoining property, fronting on Harris and Spring Sts. The first unit is scheduled for completion in May of this year.

This huge all-electric mart will be served by Georgia Power Co.

The first unit will have four 4000-amp, 460-volt, three-phase mains, with 5294 kilowatts of lighting; 3212 horsepower of air conditioning; 316 kw of water heating; 2105 kw of resistance heating; 2310 hp of heat pumps; 260 kw of cooking, plus additional plug-in receptacle loads.

The electrically heated and air conditioned building will use as much power as all the homes in a city of 16,000 population. It will have 200 miles of wiring, 18,000 fluorescent lamps and 7000 wall outlets. The floor area will total 23 acres, including three-and-half miles of corridors.

James Koen, former Atlanta Commercial Sales Engineer for Georgia Power, and now Rome Division Commercial Sales Engineer for the company, is credited with selling the designers, builders, and managers of the new building on the all-electric concept. Mr. Koen had the assistance and cooperation of Charles Minors, Atlanta Division Commercial Sales Engineer; C. W. Hamilton, Division Industrial Sales Engineer; J. C. Thompson, Assistant to G. H. Brodnax, Vice President; and J. D. Browder, company Sales Manager and Assistant to the Vice President in Charge of Sales.

The two designers of the building are C. Portman, Jr., and Britt Alderman, Jr.

Georgia Power Occupies 22-Story, All-Electric Building

This is the new home of Georgia Power Co.—a 22-story, all-electric building, in Atlanta—the 270 Peachtree Building.

THE Georgia Power Co. has occupied its new headquarters on Peachtree St. in Atlanta, a 22-story, all-electric building, known as the 270 Peachtree Building.

This new building was made necessary, Georgia Power said, because in the past decade the number of customers served by the company has increased 59 percent, while the use of electricity by its customers has increased 143 percent.

Constructed of reinforced concrete, the building is enclosed within an aluminum, glass and porcelain enamel curtain wall, 72,000 square feet in area.

At the first floor level, facing Peachtree St., on the open colonnade, the building features a fountain, about 85 feet long, lighted and controlled for varying water and lighting arrangements.

The lobby—with more than 5,000 square feet in floor space—provides ideal facilities for display. The system load dispatcher's office is located on the main floor. On the 13th floor are an employment office, employee's library, doctor's office, snack bar to seat 265 people, and other offices.

The executive offices are located on the 21st and 22nd floors.

This truly all-electric building features an underground duct system covering the entire office floor area. The lighting on a typical floor provides 100 foot-candles of maintained illumination at desk-top level.

Two 500-ton air conditioning units keep the building comfortable in the summer. The total electric load is 23 watts per square foot in office space only.

Georgia Power serves approximately three quarters of a million customers in all but six of Georgia's 159 counties. In the past 10 years the company has spent more than $430 million for new generating, transmission, distribution, and other electric facilities.

Transmission and Distribution Committee Meeting

- *Storm Resistant Distribution Design*
- *Conventional vs. Self-Protected Transformers*
- *240/480-Volt Underground Residential Service*

H. E. CODY
Chairman

THE winter meeting of the Transmission and Distribution Committee was held Jan. 19-20 at the Warwick Hotel, Philadelphia, Pa. The 220 members and guests were welcomed to Philadelphia by J. W. Anderson and L. R. Gaty, both past chairmen of the committee.

Overhead

The opening session was sponsored by J. Lummis, Chairman of the Overhead Subcommittee.

G. A. Ewald described storm resistant overhead distribution design now used by the Public Service Electric and Gas Co. for all new construction and reinforcement work. This design features lashed or spacer cable for three-phase primaries, high-strength tree wire on pole top pins for single-phase primaries, lashed reverse-lay cable for secondaries, and multiple street lights. During Hurricane Donna the primary damage rate for old-standard construction was 5½ times that for the new design.

H. D. Fischer, Jr. gave details of a new aluminum transmission tower installed by Southern California Edison Co. Utilizing tubular members in a conventional configuration, the tower weighs only 43 percent as much as an equivalent steel tower, but costs about 20 percent more. A contemplated design utilizing a triangular base would reduce the weight further possibly making it competitive with steel.

R. Martin, A. B. Chance Co., discussed the use of screw type anchors for supporting surface mounted transformers in lieu of the conventional concrete pad.

A. Klopfenstein presented a movie showing Southern California Edison Co. tests to determine the effects of short-circuit currents on two-conductor bundle suspension buses.

F. W. Link, Jr. described a proposed transmission tower load relief device developed by the Baltimore Gas and Electric Co. to avoid tower failure under extraordinary loading. The device consists of an encapsulated, notched tensile pin made of special "fatigue-proof" steel. The capsule will be 5¾ in. long, with standard ball and socket ends for attachment on the tower end of an insulator string.

A report from W. S. Price indicated excellent progress on the research project on galloping conductors now underway at the Massachusetts Institute of Technology.

D. A. Campbell, Jr. outlined Mutual Assistance Task Force plans for improving the efficiency of the storm tracking plan for companies along the eastern seaboard.

General Engineering

H. R. McNutt, Jr., Chairman of the General Engineering Subcommittee, sponsored a session featuring a discussion of conventional versus self-protected distribution transformers.

W. E. Kremmel reported that Wisconsin Electric Power Co. preference for conventional transformers is based on adequate performance, lower installed cost and fuse coordination problems encountered with the larger kva ratings of the self-protected type. Conversely, R. G. Steiner noted that Union Electric Co. experience shows that the self-protected type has a considerably better performance record and provides an over-all average annual saving of almost $7 per unit. E. N. Dye reported that the West Penn Power Co. prefers a modified version of the self-protected type for 5 and 10 kva ratings. This is a single-bushing unit with external arrester, internal protective link mounted in the bushing and no secondary breaker. Over-all costs have been less than for either of the other types and performance has been fully satisfactory.

A paper by W. H. Johnson and W. E. Mekolites analyzed loss ratio and its effect on elimination of distribution transformer sizes. Conclusions were that a 2 to 1 loss ratio transformer is the most economical if loaded in the range of 125 to 190 percent of rating, but that cost reductions must be made to justify elimination of 15, 37½ and 75 kva ratings.

D. Burns reported that the Research Activities Task Force is continuing its review of transmission and distribution problems to determine those on which further research appears desirable.

J. W. Anderson reported that a proposed revision of AEIC-EEI-NEMA Motor Starting Current Rules soon will be submitted to members for ballot.

A report from M. L. Ernst outlined progress of the American Right of Way Association in promoting effective liaison between utilities and state and national highway agencies.

The remainder of the first afternoon was devoted to a closed session on General Engineering Subcommittee matters.

Safety

The opening session on the second day was sponsored by H. W. Dannettell, Jr., Chairman of the Safety Subcommittee.

Dr. W. F. Betsch described the Philadelphia Electric Co. program for selecting applicants for linemen's and splicer's training. This program includes a review of the applicant's medical history, a physical examination and an x-ray survey of the low back. The x-ray procedure has been used for 4 years, and the addition of this technique has increased the total

rejection rate for applicants from 15 percent to 35 percent.

R. J. Fox outlined the ladder safety program of the Philadelphia Electric Co. This includes rigid purchase specifications, annual inspection and test, and employee training classes on proper use and care. With 7,000 ladders on the system, there has been only one minor lost-time accident due to ladder failure during the nine years since the program was inaugurated.

Engineering Education

Dr. S. R. Warren, Jr., Assistant Vice President for Engineering Affairs, University of Pennsylvania, discussed changes in the electrical engineering curriculum during the last generation. He emphasized that rapidly changing and expanding technology is requiring still greater stress on theory and mathematics at the expense of some reduction in practical applications and in the humanities and social sciences.

Standards and Specifications

H. G. Hally, Chairman of the Standards and Specifications Subcommittee, reported that a survey indicates that the use of applicable T & D Committee and EEI-NEMA standards and specifications by T & D members is better than 90 percent.

A. T. Green advised that the proposed new supplement to EEI-NEMA standards for street lighting poles is almost ready to be released for printing. Work on a proposed revision of standards for filament lamps and new standards for light sensitive control is continuing.

H. MacVaugh reported that the proof-testing program to confirm proposed methods of providing for interchangeability of aluminum conductor compression connector tools and fittings is proceeding on schedule, and that a final report is contemplated early next year.

C. E. Topping announced publication of TD-20, "Specifications for Insulated Clevises," and TDJ-7, "EEI-NEMA Standards for Spool Type Secondary Racks." The EEI-NEMA Joint Committee on Pole Line Hardware is continuing to work on proposed new standards for secondary extension brackets and aerial cable hangers, as well as revisions to keep existing specifications up-to-date.

W. H. Johnson reported that the Timber Products Task Force is continuing its investigation of techniques for groundline treatment of poles, and also is considering initiation of several new projects in other areas needing attention.

F. G. Josberger reported that ballots received to date show that most members favor the proposed four standard variations of #4 aluminum overhead service drop cable.

Underground

The final session was sponsored by J. F. Hennessy, Chairman of the Underground Subcommittee.

R. G. Atkinson presented a paper by W. M. Winslow and R. K. McCaig giving details of a Public Service Co. of Colorado adaption of network protectors to serve a critical load simultaneously from two sources of generation. The critical load involves two IBM Random Access and Memory Computers, handling nationwide flight reservation data with permissible outage time limited to nine cycles.

C. R. North discussed cable rating practices applied by the Philadelphia Electric Co. In general, standard ratings for each class of cable, based on average conditions, are used. Thermocouples are installed permanently in all of the more heavily occupied conduits and checked each year at the time of maximum earth temperature.

A. A. Smith gave details of Baltimore Gas and Electric Co. plans to supply a new total-electric home development with 240/480-v, single-phase underground service. Analysis showed this system to be the least costly type of underground service. Direct-buried, single-phase primaries, secondaries and services are used in conjunction with pad-mounted transformers. Autotransformers in each house will provide for 12-v requirements.

D. F. Tulloch summarized data compiled for the "1956-1958 AC Network Operations Report." Network protectors cleared faults successfully 99.4 percent of the time. The transformer bank failure rate continued to decline to 0.18 failures per 100 banks per year. The use of rubber-insulated, neoprene-jacketed cable for secondaries continued to increase, and this type cable experienced the lowest failure rate of 0.35 failures per 100 miles per year.

The remainder of the afternoon was devoted to a closed session on Underground Subcommittee matters.

Report on Electric Industry's Atomic Projects

(Continued from page 86)

Section 182, which provides for preference consideration of license applications by public or cooperative bodies, should be deleted.

Because of the increased number of projected nuclear power plants and the geographical diversity of their locations, we recommend that the Price-Anderson Indemnity Legislation be clarified by amendment to specifically indicate coverage in the event of an incident in the United States causing damage outside the United States.

As far as we know, no other nation has a nuclear power developmental program as comprehensive as that of the United States. We have utility-size power reactors in operation to give us necessary operating and maintenance experience, and at the same time, a broad, diversified developmental program stressing research and prototype reactor construction. Time has indicated that such an approach is sound, and that improvement in technology, and not kilowatts, is the essential ingredient for the ultimate success of our nation's program.

People in Power

F. L. FLETCHER, Executive Vice President of Sierra Pacific Power Co., has been named President of the company. He suceeds F. A. TRACY, who was named Chairman of the Board. Both promotions became effective March 1.

Mr. Fletcher had been executive vice president of the utility since May, 1960. Mr. Tracy had been president of the firm since 1942, and had been general manager for two years, when he was elected president.

Mr. Fletcher is a 1933 electrical engineering graduate of the University of Nevada. He began his public utility career with Sierra Pacific 31 years ago, working summers while attending the university.

From 1933 to 1935 he worked with the Nevada State Highway Department. Returning to Sierra Pacific in 1935, he worked from then until 1941 in the company's engineering department.

In 1941 Mr. Fletcher left Reno to take a position with the Central Illinois Electric and Gas Co., as distribution engineer. He returned to Sierra Pacific as executive vice president in 1960.

During Mr. Tracy's presidency of Sierra Pacific, the company has grown from about 15,500 electric customers in 1940, to more than 46,000 customers at the end of 1960.

Mr. Tracy was graduated from the University of Maine with an electrical engineering degree in 1919.

His 41 years in the utility business began in the statistical department of Stone & Webster Service Corp. in Boston. From 1920 to 1922 he was assistant distribution superintendent for the Ponce Electric Co. in Puerto Rico. During the 12 following years he was with the Blackstone Valley Gas and Electric Co. at Pawtucket, R. I. He later served for two years as expert engineer analyst with the Securities and Exchange Commission in Washington, D.C. He joined Sierra Pacific Power Co. in Reno as manager in March, 1940.

He is a vice president and director of the Pacific Coast Electrical Association, of which he was president in the 1950-51 organization year.

Mr. Tracy is a trustee of the High Temperature Reactor Development Association, in which more than 50 electrical utility firms are cooperating to study new methods of generating electricity with nuclear fuel.

F. L. FLETCHER

F. A. TRACY

H. I. MILLER, Vice President in Charge of Operations, Wisconsin Public Service Corp., and President, Wisconsin Utilities Association, has retired after 38 years of service to the utility industry.

A graduate of the University of Wisconsin with a degree in electrical engineering, he joined WPS in 1923 as an engineer in Menominee, Mich. His career was interrupted several times between 1941 and 1954 by special U.S. Government assignments, both in this country and abroad.

He served in Washington with the War Production Board during World War II, and in 1945 he assisted in the nation-wide "brownout." In 1947 he was sent to Japan to help rehabilitate the Japanese electric industry. In 1949 he was assigned to the National Securities Resources Board in Washington, and later that year to the Economic Cooperative Administration in Paris. He returned to Washington in 1951 with the Defense Electric Power Administration. In 1954 he was assigned to the Foreign Operations Administration to help with an economic study for the Atomic Energy Commission.

An expert in rate matters, Mr. Miller served as chairman of the EEI Rate Research Committee for two years, and for 10 years was chairman of the WUA Rate Committee. Mr. Miller will continue as president of WUA until the expiration of his term of office in May of this year.

J. F. CRIST has been named Executive Vice President of The Southern Co. Mr. Crist was a Vice President of Southern, and President of Southern Electric Generating Co., subsidiary of Southern.

T. H. VADEN, Vice President of Southern, has succeeded Mr. Crist in the Birmingham office, and A. W. VOGTLE, Jr., Birmingham attorney, has succeeded Mr. Crist as President of Southern Electric Generating.

Mr. Crist entered the electric power business in 1926, when he joined Alabama Power Co. Two years later he joined South Carolina Power Co., and became a vice president in 1941. From 1948 to 1956, he was vice president of Gulf Power Co. A vice president of Southern since 1947, Mr. Crist became president of Southern Electric Generating in 1957.

D. H. SWANSON has been elected Vice President of Public Service Co. of Indiana. He will be in charge of the Southern division, with headquarters in Columbus.

Industry Leases Site for the 1964-65 World's Fair

A LEASE for a 45,000-square-foot exhibit site at the New York 1964-1965 World's Fair has been signed by the Fair Corp. and Power & Light Exhibit, Inc., which is administering the participation of the investor-owned electric utility industry at the Fair.

In addition to the signing of the lease by Ernest R. Acker, President of P&LE, and Chairman of the Board of Central Hudson Gas & Electric Corp., a check for $90,000 as half the first year's rent was presented by Harold S. Sutton, Treasurer of P&LE, and Treasurer of Consolidated Edison Co. of New York, Inc., to J. A. Panuch, Vice President in Charge of Industrial, Federal, State and Special Exhibits for the Fair Corp.

The P&LE exhibit will occupy a corner site near the lagoon on two of the Fair's principal traffic arteries.

"An exciting concept is being developed for the electric industry exhibit," Mr. Acker said. "By the middle of this year, we expect to be able to announce the principal features of the exhibit now being designed for us by VEK Associates, Inc."

A check for $90,000—half of the first year's rent for the 45,000-square-foot exhibit site of the investor-owned electric utility industry at the 1964-65 World's Fair—is presented to J. A. Panuch, second from left, Vice President in Charge of Industrial, Federal, State and Special Exhibits for the Fair Corp. Check is presented by Harold S. Sutton, Treasurer, Power & Light Exhibit, Inc., and Treasurer, Consolidated Edison Co. of New York, Inc. At left is Ernest R. Acker, President, PL&E, and Chairman, Central Hudson Gas & Electric Corp. Edwin Vennard, Vice President and Managing Director of Edison Electric Institute is shown at right.

Lowe Named Manager of Live Better Electrically Program

APPOINTMENT of A. V. Lowe as Manager of EEI's Live Better Electrically program has been announced by Edwin Vennard, Vice President and Managing Director of the Institute.

A. V. LOWE

Mr. Lowe will administer the $2.5 million advertising and promotional program of Live Better Electrically, which is concentrating its efforts in such leading national magazines as *Life*, *Saturday Evening Post*, *Better Homes & Gardens*, and *Reader's Digest*. Subjects being promoted are electric heating and cooling, the Medallion Home, electrical ranges, dryers, and water heaters.

Mr. Lowe has extensive experience in advertising and promoting electrical appliances. Most recently he was vice president of Grant Advertising, Inc., supervising the International General Electric Co. account. Prior to that he served as account executive with Erwin Wasey Ruthrauff & Ryan, Inc., on the General Electric air conditioning account. From 1949 to 1956, Mr. Lowe worked in various advertising and sales promotion capacities for several GE divisions.

A graduate of the University of Missouri School of Journalism, Mr. Lowe served in World War II with the U.S. Army Air Corps.

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West Springfield, Mass.

Residential Electric Heating & Air Conditioning
C. E. ANDERSON
Virginia Electric and Power Co.
Richmond, Va.

Residential Lighting Promotion
R. W. SCHMIDT
Indianapolis Power & Light Co.
Indianapolis, Ind.

Residential Wiring Promotion
J. F. ROBERTS
Philadelphia Electric Co.
Philadelphia, Pa.

Advertising
O. K. LeBLANC
Louisiana Power & Light Co.
New Orleans, La.

Area Development
R. P. LEE
The Connecticut Light & Power Co.
Berlin, Conn.

Live Better Electrically Policy
W. M. SHEPHERD
Arkansas Power & Light Co.
Little Rock, Ark.

Market Research
G. L. LAHODNY
The Detroit Edison Co.
Detroit, Mich.

Sales Personnel & Training
G. J. STEFFEN
Union Electric Co.
St. Louis, Mo.